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International Burch University

Francuske revolucije bb 71 210 Ilidža,
Sarajevo Bosnia and Herzegovina
Tel. +387 33 944 400 Fax +387 33 944 500
Email: info@ibu.edu.ba Web: www.ibu.edu.ba

I PART: Faculty of Economic and Social Sciences

THE EFFECT OF LEADERSHIP AND ORGANIZATIONAL CULTURE ON EFFECTIVENESS OF NGOS: AN EMPIRICAL STUDY

Ali Coskun

International Burch University

Bosnia and Herzegovina

ali.coskun@ibu.edu.ba

Hasan Metin

University for Business and Technology Pristina

Abstract

This study aims to investigate the effect of leadership and organizational culture on organizational effectiveness of nongovernmental organizations (NGOs). In the study, after a comprehensive literature review, an empirical study by means of a survey questionnaire has been conducted to find out the effect of leadership and organizational culture on effectiveness. In the study, organizational culture is conceptualized as motivational climate within the organization, the atmosphere that relies on trust and confidence and willingness of members to take responsibility and the leadership is analyzed in terms of being democratic, respecting others, being participative in decision making and taking risks when necessary. The effectiveness of NGOs refers to the achievement of the previously set objectives, using benchmarking as an indicator, and diversifying the sources of revenue. The results obtained from the survey show that organizational culture and leadership both have positive effects on effectiveness of NGOs.

Key words: Effectiveness, Leadership, NGO, Organizational Culture, Volunteerism.

THE MICROFINANCE TALE: THE BRIGHT AND DARK SIDES OF THE NARRATIVE BOSNIA AND HERZEGOVINA EXPERIENCES (CHAPTER 17)

Ali Coskun

International Burch University
Bosnia and Herzegovina
ali.coskun@ibu.edu.ba

Zehra Mahmutović

International Burch University
Bosnia and Herzegovina
zehra.mahmutovic@ibu.edu.ba

Abstract

In recent years, microfinance institutions have gained great attention and were described as the most “attractive” mode of financing for developing nations. Inspired by a quote that, “You start thinking about the beginning once you arrive at the end,” this study attempts to rewind and provide a brief revision of the microfinance system within the developing settings of Bosnia and Herzegovina. The whole story traces back to the deepest convictions of Muhammad Yunus, a Bangladeshi banker, that the right to get a loan should be included in the sequence of basic human rights as well as his contribution to the poverty reduction challenge through the establishment of Grameen Bank (the bank for the poor) in 1976. Today, when we all are witnesses that his idea was pretty sustainable, and are tirelessly discussing it as the greatest innovation of the last century, there is a necessity to draw a comparison between the initial idea and its realisation, and decipher to what extent the realisation is consistent or not. In this study, we inspected whether microfinance institutions have “turned back” from their original mission of providing financial support for small entrepreneurs, based on the experiences of the clientele in Bosnia and Herzegovina, a developing country in Southeast Europe (SEE). Furthermore, it seeks answers for the open question: has the initial idea of fighting poverty become a stumbling block, making the poor even poorer, or a work-only solution for the enormous rate of unemployment in Bosnia and Herzegovina?

Key words: Microfinance, Microfinance Institutions (MFIs), Microcredit Organisations (MCOs), Poverty, Debt, Developing, Small and Medium-Sized Enterprises, Bosnia and Herzegovina.

BEHAVIORAL FINANCE PERSPECTIVE ON MANAGERIAL DECISION MAKING UNDER RISK IN COMMERCIAL BANKS

Ali Coskun

International Burch University
Bosnia and Herzegovina
ali.coskun@ibu.edu.ba

Amra Halaba

International Burch University
Bosnia and Herzegovina

Abstract

Decision making is the most important and the most difficult task that managers perform. On the other side they are most of the time confronted with risk and uncertainty, especially in banking industry. Objective of this study is to examine how managers of commercial banks performs this task, by putting it in the perspective of the newest findings from Behavioral finance field. Behavioral finance is based on premise that decision makers behave less than fully rational. Due to their deeply rooted human nature managers are prone to make decisions based on subjective evaluation of available options, relative to certain reference point and to current state of wealth, and also according to their personal interests which may contradict bank's, industry's and social welfare's. Specifically, this study explores role of heuristics, biases and intuition in decision making, through concise review of existing literature. Importance of the study is in a fact that commercial banks are simultaneously the most important industry for country's economic development and stability and the most submissive industry to the risk. Owing to systematic nature of risk generally in financial markets, any irregularity in one country's banking industry will eventually reflect on other countries and is able to make ground for crisis. Study will contribute to better understanding of managerial perception of risk and their behavior under risk, which is primarily useful for architects of banks' corporate governance and banks' regulative. As we will see, setting identical option in two different frames leads to different decisions, which opens up possibilities to construct an environment in such a manner that decision makers are naturally led to make decisions that are in the best interest of all stakeholders involved.

Keywords: Behavioral Finance, Decision Making, Risk in Banking, Commercial Bank

MACD - ANALYSIS OF WEAKNESSES OF THE MOST POWERFUL TECHNICAL ANALYSIS TOOL

Sanel Halilbegović

International Burch University

Bosnia and Herzegovina

sanel.halilbegovic@ibu.edu.ba

Abstract

Due to the huge popularization of the stock trading amongst youth, in the recent years more and more of trading and brokerage houses are trying to find a one 'easy to understand' tool for the novice traders. Moving average convergence divergence seems to be the main pick and unfortunately inexperienced traders are relying on this one tool for analysis and trading of various securities. In this paper, I will investigate the validity of MACD as the 'magic wand' when solely used in investment trading decision making. The main limitation of this study is that it could be used more widely across industries and various sizes of companies, funds, and other trading instruments.

Keywords: *Moving Average Convergence Divergence (MACD); Technical Analysis; Signal and Profit Relation; Stock Market Trading; Profitability*

BENEFIT ANALYSIS OF A DEVELOPING MARKETS STOCK EXCHANGE MERGERS: CASE OF A BORSA ISTANBUL AND SARAJEVO STOCK EXCHANGE

Sanel Halilbegović

International Burch University

Bosnia and Herzegovina

sanel.halilbegovic@ibu.edu.ba

Abstract

Whether due to mentality or the lack of investment ‘culture’, but people in the Balkans have certain repulsion towards investing in financial instruments offered by the local exchanges. Based on the public opinion one can conclude that most of the people are reluctant to invest in the financial instruments because they can’t rely on the trustworthiness and credibility of the local exchanges, due to corruption scandals, misconduct and wrongdoings that happened in the recent history. Since its inception, Sarajevo Stock Exchange has been suffering from extremely low volume and poor investment liquidity that in the end resulted with choppiness and overall instability in the market. Turkey’s main stock exchange, Borsa Istanbul, which is 80 times larger than SASE, has openly expressed interest in direct cooperation with Sarajevo Stock Exchange and that strategic move can certainly reduce or even eliminate problems local investors face. This study examines the effect of benefits and costs of the cooperation between Borsa Istanbul and Sarajevo Stock Exchange (SASE). Multiple facets of the benefits and costs are examined and their effect on the macro and micro scale. Macro effects of the raising stake of Borsa Istanbul in SASE include effects on government, municipality and overall economic level, while micro effect is the direct effect to the ‘end-consumer’, a small investor. The secondary data will be used in analysis of benefits to costs with the side by side comparison and eventual derivation of the Benefit/Cost ratio (BCR) that will test the hypothesis that benefits highly outweigh the costs in this cooperation. The research shows that raising the stake of Borsa Istanbul in SASE will bring a new level of professionalism and trust in a corruption and unprofessionalism ridden SASE. In addition Borsa Istanbul will open new market horizons to investors from Bosnia and as an outcome we should see and increase in market liquidity, trading volume and even the BDP of both countries.

Keywords: Emerging Stock Markets, Cross Listing, Stock Market Merger

LIMITATIONS AND INCONSISTENCIES OF STANDALONE USAGE OF STOCHASTICS INDICATOR IN STOCK TRADING

Sanel Halilbegović

International Burch University
Bosnia and Herzegovina
sanel.halilbegovic@ibu.edu.ba

Elvisa Buljubašić

International Burch University
Bosnia and Herzegovina
elvisa.buljubasic@ibu.edu.ba

Abstract

Due to the huge popularization of the stock trading amongst youth, in the recent years more and more of trading and brokerage houses are trying to find a one 'easy to understand' tool for the novice traders. The purpose of this study is to analyze one of the 'magic tools' of trading called Slow Stochastics. Authors plan to examine limitations and inconsistencies when using Stochastics as a sole determinant of investment decisions. Slow Stochastics or simply Stochastics indicator seems to be the one of the main picks and unfortunately inexperienced traders are relying on this one tool for analysis and trading of various securities. Secondary data will be used to analyze the signal strength and profit relation using regression and paired sample t-test. The outcome of the study was that Stochastics indicator is highly unreliable due to a very weak coefficient of determination hence the tool should be used only when coupled with other technical analysis indicators. The main limitation of this study is that it could be used more widely across industries and various sizes of companies, funds, and other trading instruments. On the other side, future researches could use this study as a base line for deeper analyses of Stochastics as well as creation of the custom made or industry specific indicators.

Keywords: *Slow Stochastics, Technical Analysis, Signal and Profit relation, Stock Market Trading, Profitability*

IMPACT OF HIGHER EDUCATION SERVICE QUALITY ON STUDENT SATISFACTION AND ITS INFLUENCE ON LOYALTY: FOCUS ON FIRST CYCLE OF STUDIES AT ACCREDITED HEI IN BH

Emina Mekić

International Burch University
Bosnia and Herzegovina
emina.mekic@ibu.edu.ba

Ensar Mekić

International Burch University
Bosnia and Herzegovina
ensar.mekic@ibu.edu.ba

Abstract

The purpose of this study is to investigate relationship between higher education service quality and student loyalty through student satisfaction. Secondary goals are to examine influence of each five dimensions individually on student satisfaction, effect of perceived value on student satisfaction and impact of student satisfaction on loyalty. Eight variables are identified from the literature and survey will be developed accordingly. For all variables, there are previously developed scales which are validated by many researchers and highly reliable. For purposes of analyzing methodology, Structural Equation Modeling will be applied. Direct, positive, and significant effect is expected to occur between all relationships in the proposed model. Main limitations that might occur while implementing this study are related to insufficient response rate and time limits.

Keywords: Higher Education, Service Quality, Satisfaction, Loyalty

THE IMPACT OF THE RUSSIA-GEORGIA WAR IN SOUTH OSSETIA AND THE GLOBAL FINANCIAL CRISIS ON THE EXPORT OF GEORGIA

Ahmet Sekretar

International Burch University

Bosnia and Herzegovina

ahmet.sekretar@ibu.edu.ba

Abstract

Russia-Georgia conflict in South Ossetia caused a war in 2008 and during the same year Georgia had struggled to the quickly-following global financial crisis. The researcher tries to estimate the economical loss of the export of Georgia due to Russia-Georgia war however existing of the global financial crisis at the same time period is imposed on researcher to analyze two important events together. The war lasted only five days but politics and economy of Georgia were affected seriously. This war caused on no serious damage of country's infrastructure however it resulted in critical damage in terms of industry, construction projects, tourism, agriculture, and export. This paper aims to find out the effects of the Russia-Georgia war in South Ossetia and 2008 global financial crisis on the export of Georgia by using statistical and econometric analysis.

Keywords: Russia-Georgia War, Financial Crisis, Export

MEASURING THE EFFECT OF TRADE OPENNESS ON ENTREPRENEURSHIP DEVELOPMENT IN CASE OF GEORGIA

Ahmet Sekretar

International Burch University

Bosnia and Herzegovina

ahmet.sekretar@ibu.edu.ba

Azer Dilanchev

Abstract

In contemporary world it have been accepted that entrepreneurship is one of the main life-force of modern economic growth. It became extensively researched and an important concept in academic society. The Georgian government has been trying to encourage entrepreneurship development by supporting the development of small and medium enterprises in the country, conducting liberal reforms, and encouraging openness for doing business. The contribution of trade openness on economic growth has been the subject of several theoretical and empirical studies in the economic literature. The purpose of this paper is to investigate and empirically reveal the importance of trade openness on entrepreneurship development in case of Georgia.

Keywords: Entrepreneurship, Trade openness, Economic growth

WHAT DETERMINES POST-IPO MARKET PERFORMANCE: EVIDENCE FROM TURKISH IPOs

Ahmet Sekretar

International Burch University

Bosnia and Herzegovina

ahmet.sekretar@ibu.edu.ba

Fatih Macit

Selver Seda

Esra Simsek

Abstract

In this paper we investigate the determinants of the short-run post-IPO market performance of IPO stocks for Turkish markets. We looked at various firm specific accounting and IPO related variables namely the ratio of operating profit to total sales, the ratio of total debt to total assets, IPO size, public float, the ratio of shares that are purchased by foreign investors, and the market value to book value ratio. We find that IPO size appears to be the most important variable in determining the post-IPO market performance of IPO stocks. Large IPO's tend to have a better post-IPO market performance. Besides that firms with a larger debt ratio are expected to show a better performance in the short-run. It is seen that as public float increases IPOs tend to show a poorer performance.

Keywords: Post-IPO performance, Turkish stock market

REGIONAL ECONOMIC DEVELOPMENT IN THE BALKAN REGION

Teoman Duman

International Burch University
Bosnia and Herzegovina
teoman.duman@ibu.edu.ba

Merdžana Obralić

International Burch University
Bosnia and Herzegovina
merdzana.obralic@ibu.edu.ba

Erkan Ilgün

Uğur Ergun

Abstract

This edited volume brings together original scientific studies on current economic and developmental issues in the Balkan region, and is composed of papers by 25 authors from seven different countries. The Balkan region has gained significant interest in recent years due to its location and strategic position, representing a doorway to Europe, and the region's stability and progress have direct consequences on various European countries. Because of this strategic position, there is currently much debate regarding a potential partnership of the Balkan states with the European Union. This book offers insights into the current economic and developmental status of the countries in this region, offering a series of chapters that analyse the area from a variety of perspectives. It begins with a discussion on the recent history of the region, especially with reference to the former Yugoslavia and its break-up after the turbulence experienced in 1990s. Other sections are complementary to each other in that they offer comparisons of the Balkan states in their economic progress at the micro and macro levels. Topics such as European integration policies and effects, economic transition, regional trade, tax incentive policy, regional capital markets, regional development agencies and systems, remittances and foreign aid contributions, import-export policies, fiscal policies, analysis of regional microfinance, and the tourism sectors are explored in detail throughout the book

IMPACT OF LEASING PERFORMANCE FACTORS ON CUSTOMER SATISFACTION; EMPHASIS ON VB LEASING

Merdžana Obralić

International Burch University
Bosnia and Herzegovina
merdzana.obralic@ibu.edu.ba

Almir Ljeskovic

International Burch University
Bosnia and Herzegovina

Abstract

Main objective of this study is to identify key Leasing performance factors that influence customer satisfaction in VB Leasing and other leasing companies. On the basis of literature review, eight independent and one dependent variable have been identified, and specific measuring items were developed accordingly. Structured survey was prepared on the basis of mentioned measuring items to measure related variables, and it was used as main instrument in this study. Survey has been sent in online form to clients of VB Leasing via e-mail and social networks. Out of 250 managers who received the survey, 200 respondents completed it which gives response rate of 80%. Responses were analyzed using descriptive statistics in excel, but main methodology was regression analysis using SPSS. The findings indicated that there is a significant positive relationship between Processing Speed (PS), Form Simplicity (FS), Image of Leasing Company (CI), Communication with Company (CC), Annuity Ammount (AA) and Grace Period (GP) on Customer Satisfaction (CS). On the other hand, there is no relationship between Interest Ammount (IA) and Down Payment (DP) with Customer Satisfaction (CS). Research is completed in one company operating in Bosnia and Herzegovina (BH) and it is suggested for future research to do the study considering more companies, to test more different independent variables and do the research in all cantons of Federation of Bosnia and Herzegovina, entity Republic Srpska and District Brčko. Main objective of this study is to identify key Leasing performance factors that influence customer satisfaction in VB Leasing and other leasing companies. On the basis of literature review, eight independent and one dependent variable have been identified, and specific measuring items were developed accordingly. Structured survey was prepared on the basis of mentioned measuring items to measure related variables, and it was used as main instrument in this study. Survey has been sent in online form to clients of VB Leasing via e-mail and social networks. Out of 250 managers who received the survey, 200 respondents completed it which gives response rate of 80%. Responses were analyzed

using descriptive statistics in excel, but main methodology was regression analysis using SPSS. The findings indicated that there is a significant positive relationship between Processing Speed (PS), Form Simplicity (FS), Image of Leasing Company (CI), Communication with Company (CC), Annuity Ammount (AA) and Grace Period (GP) on Customer Satisfaction (CS). On the other hand, there is no relationship between Interest Ammount (IA) and Down Payment (DP) with Customer Satisfaction (CS). Research is completed in one company operating in Bosnia and Herzegovina (BH) and it is suggested for future research to do the study considering more companies, to test more different independent variables and do the research in all cantons of Federation of Bosnia and Herzegovina, entity Republic Srpska and District Brčko.

Keywords: *Leasing, VB Leasing, Performance, Customer Satisfaction*

THE IMPACT OF VIRTUALIZATION AND CLOUD COMPUTING TO MODERN BUSINESS

Merdžana Obralić

International Burch University
Bosnia and Herzegovina
merdzana.obralic@ibu.edu.ba

Aida Habul

School of Economics and Business in Sarajevo, University of Sarajevo
Bosnia and Herzegovina
aida.habul@efsa.unsa.ba

Miza Habul

The Audit Office for Institutions of FBiH Bosnia and Herzegovina

Dario Frimel

School of Economics and Business in Sarajevo, University of Sarajevo
Bosnia and Herzegovina

Abstract

Nowadays, the increasing application of information technology in modern business and life in general, virtualization and cloud computing are new solutions designed to increase the level of system abstraction and degree of utilization of computer performance. New technologies offer the flexibility, the ability to adapt workloads resources and to realize cost savings of IT infrastructure in terms of administration and support costs. The period when the big companies had a monopoly and control over resources and information are far behind us and the only companies to survive in the future are „smart “ companies. This paper defines the terms virtualization and cloud computing and explains its importance as the challenge of rapid success and growth of the company. Special attention is focused on the savings and its benefits. The advantages of application virtualization and cloud computing are numerous only in case they are implemented in the right way, although many managers have doubts about this technology. The data is obtained through an online survey which was conducted in the companies in Bosnia and Herzegovina as well as data Forrester Research that determined the current level of application of virtualization and cloud computing in the world and companies in Bosnia and Herzegovina. Besides, it pointed out the guidelines of the future steps. 80 International Conference on

Economic and Social Studies Application of virtualization and cloud computing depend on the will of societies, organizations and people in order to understand this concept that deals with many issues and problems. It is not only knowledge on technology that is enough to solve these issues and problems.

Keywords: Information Technology - IT, Virtualization, Cloud Computing, Intelligent Company, IT Infrastructure

IMPLEMENTATION METHODS AND TOOLS FOR CONTINUOUS IMPROVEMENT OF QUALITY MANAGEMENT SYSTEM IN SME

Merdžana Obralić

International Burch University
Bosnia and Herzegovina
merdzana.obralic@ibu.edu.ba

Aida Habul

School of Economics and Business in Sarajevo, University of Sarajevo
Bosnia and Herzegovina
aida.habul@efsa.unsa.ba

Dževad Šahić

University of Sarajevo
Bosnia and Herzegovina
dzevad.sasic@fu.unsa.ba

Abstract

Economic progress and growth give an incessant impulse to the companies to focus their attention to the competitiveness in quality beside the price or market value competitiveness. The management should insist on never-ceasing quality improvement of their products so that the consumers will not turn to other companies, your competitors, in order to fully satisfy their needs. In order to improve the quality it is necessary to dispose of data signifying particular presence of quality in the production processes. By using statistics methods and data may be made easily accessible and prepared for further analysis. Statistical methods and tools serve as assistance the management may use in order to make decisions on quality improvement, that is measuring, analysing and improving business processes further on. With the aim of providing a profound understanding of its use, purpose and goal, this paper gives empirical analysis of small and medium enterprises in Bosnia –Herzegovina in order to elaborate the importance and significance of application of these methods and tools.

Keywords: Quality Management, Methods and Tools, Continuous Improvement of the Quality Management System

EXPLORING THE DIFFERENCES IN THE DEVELOPMENT OF RURAL AREAS IN BOSNIA AND HERZEGOVINA

Nataša Tandır

International Burch University
Bosnia and Herzegovina
natasa.tandir@ibu.edu.ba

Zafer Konakli

International Burch University
Bosnia and Herzegovina
zafer.konakli@ibu.edu.ba

Abstract

Over the course of the past two decades peripheral European economies in the Balkans and in Eastern Europe have experienced significant structural changes and have adapted to the global economic environment. Agriculture and the processing, using and trading of agricultural products play an important role in their economies. This volume covers several issues facing the contemporary agricultural sector in these countries, such as the framework of the Common Agricultural Policy of the European Union, the identification of an opinion leader portrait in agriculture, the characteristics of using Information and Communication Technologies as tools in the partnerships and internal processes of enterprises throughout the whole agro-food supply chain, the increased need of small-scale artisanal food businesses to seek new markets abroad, the perceptions of Greek olive oil importers in the UK, the barriers that Greek yogurt entrepreneurs face during their export activities, the reasons for the differences in economic performance and the role of tangible and less tangible factors influencing development outcomes. It will be of interest to researchers studying economic development, agricultural economists, businesses active in the primary sector and students of applied economic analysis.

PERCEIVED SATISFACTION WITH PUBLIC TRANSPORT SERVICE: CASE STUDY OF GRAS

Nataša Tandić

International Burch University
Bosnia and Herzegovina
natasa.tandir@ibu.edu.ba

Haris Tandić

International Burch University
Bosnia and Herzegovina
haris.tandir@ibu.edu.ba

Abstract

Public service quality is in recent years one of the major challenges for economic analysis. It is due to the size of companies providing public services as well as to the importance of obtained results both for companies offering the services and for the public policy creators and administrators. One of the aspects that can be evaluated is the level of service offered or the supply side. The other side is the perceived satisfaction with the service quality, which represents the demand side aspect. There is not much research that analyzes how the passengers perceive the quality of the services. The objective of this paper is two folded. Firstly, to evaluate the quality of GRAS services from the aspect of users and secondly to see what needs to be improved in order for non-users or people who rarely use public transport to become regular users. The information is valuable for policy makers as well as operational managers in the public transport system. An insight into what users consider as important and how they perceive existing public transport service can show that investment and improvement of existing service can really attract new users and keep the existing ones. The data were collected using self-administered internet mediated questionnaires to the residents of Sarajevo Canton. In total 247 persons answered the questionnaire. The response rate was above 50 per cent. The results showed that there is wide space for improvements in service, especially if the company is trying to reach non-users.

Keywords: Public Transportation, Services, Satisfaction

SUPPORTING THE THEORY ON THE POTENTIALS OF IMMOBILE RESOURCES FOR CREATING COMPETITIVE ADVANTAGES IN RURAL AREAS

Nataša Tandır

International Burch University
Bosnia and Herzegovina
natasa.tandir@ibu.edu.ba

Zafer Konakli

International Burch University
Bosnia and Herzegovina
zafer.konakli@ibu.edu.ba

Sabahudin Bajramović

University of Sarajevo
Bosnia and Herzegovina

Abstract

For many years rural was associated with population decline, degradation of the countryside, population aging, gender inequality, increased unemployment and poverty. However, recent research emphasise that there are peripheral areas that perform good or even better than urban areas which leads to the concept of “differential performance” between rural areas which exist in relatively similar conditions related to geography, location, available natural resources, policies, etc. It is obvious that traditional theories related to rural-urban development processes, cannot explain those performance differences of rural areas with similar characteristics. In this study the authors are presenting key aspects of main development theories that can be connected to the development of rural areas. Likewise, they present the model and significant research efforts supporting the theory on the potentials of immobile resources for creating competitive advantages in rural areas and possibility for economic development (also known as Bryden's theory). In this context, immobile resources are including natural, built, human, social and cultural capital.

Keywords: Rural Development, Theories, Immobile Resources

SOCIO-ECONOMIC DIFFERENCES IN THE DEVELOPMENT OF RURAL AREAS IN FEDERATION OF BOSNIA AND HERZEGOVINA – CASE STUDY

Nataša Tandir

International Burch University
Bosnia and Herzegovina
natasa.tandir@ibu.edu.ba

Zafer Konakli

International Burch University
Bosnia and Herzegovina
zafer.konakli@ibu.edu.ba

Sabahudin Bajramović

University of Sarajevo
Bosnia and Herzegovina

Abstract

In Bosnia and Herzegovina some rural municipalities with similar population density are very different regarding key demographic and economic indicators like migration, unemployment and average wages. According to the existing studies in Europe the answer for differential economic performance is firstly in the potential of local community to recognize, strengthen and utilize less mobile assets in the form of economic, social, cultural and natural capital. Secondly, researchers point to the synergy between those assets and external networking and using information and communications technology in reaching new markets and resources. Understanding the reasons for differential economic performance and more or less competitiveness in rural areas of Bosnia and Herzegovina could thus be a key element in devising practical strategies and programs for sustainable rural development. This could also contribute to the programming of Instrument for Pre-Accession Assistance for Rural Development of Bosnia and Herzegovina in the future. The aim of the study is by comparing the most and least developed rural municipalities to investigate the reasons for the differences in economic performance, in particular, to investigate the role of capitals or tangible and less tangible factors influencing development outcomes. In order to achieve that, the authors have chosen high and low performing municipalities according to the criteria of population density, rurality and proximity to large city. In order to have more clear picture, community profiling is conducted and data was collected by surveying community stakeholders. The analysis showed that in high performing municipality all capitals are

accessible and properly utilized with space for improvement while low performing municipality has many problems and higher need for change and new strategy of development.

Keywords: *Rural development, Community Capitals, Municipality*

INFLUENCE OF NONGOVERNMENTAL ORGANIZATIONS ON FORMING COUNTRY IMAGE AND DEVELOPING THE COUNTRY BRAND USING PUBLIC DIPLOMACY

Mehmet Turker

International Burch University
Bosnia and Herzegovina
mehmedin@hotmail.com

Zafer Konakli

International Burch University
Bosnia and Herzegovina
zafer.konakli@ibu.edu.ba

Abstract

Country image and nation branding provide a competitive advantage for small and medium-sized enterprises in their internationalization. This paper analyzes the influence of Turkish nongovernmental organizations on forming country image of Turkey and developing the country brand using public diplomacy in the African continent. The published interviews and statements of Turkish and African politicians, business people and intellectuals argue that these organizations are effectively using public diplomacy to create the country brand. This paper focuses on the most active organization, the Confederation of Businessmen and Industrialists of Turkey (TUSKON) which supports to its members in communicating with their potential customers in several occasions, and having a differentiating statement and a competitive advantage by promoting the brand image of the country. This civil society support is significant, especially for the small and medium enterprises of developing countries, when considered the weak international image and reputation of these countries.

Keywords: Employers' Organizations; Internationalization of SME; Country image; Public Diplomacy; Nation Brand

THE PERCEPTION OF INFORMATIONAL BARRIERS TO THE INTERNATIONALISATION OF BOTH MICRO-SMALL SIZED AND MEDIUM- SIZED ENTERPRISES

Mehmet Turker

International Burch University
Bosnia and Herzegovina
mehmedin@hotmail.com

Zafer Konakli

International Burch University
Bosnia and Herzegovina
zafer.konakli@ibu.edu.ba

Abstract

This paper addresses informational barriers to the internationalisation of small and medium-sized enterprises. Analysing the survey conducted to the owners of 235 small and medium-sized enterprises in Turkey, we argue the informational barriers such as inability to contact potential overseas customers, identifying foreign business opportunities, lack of knowledge of external markets, and different foreign customer habits and attitudes are key barriers while language differences is not a key barrier. Moreover, the findings show that all these barriers are positively correlated with each other. The findings also point out that the perceptions of informational barriers faced by firms are negatively correlated with company size.

Keywords: Informational Barriers, SME Internationalisation, Small and Medium Sized Enterprises

PRIMING THE NATION FOR WAR: AN ANALYSIS OF THE EMERGENCE AND DISCURSIVE MACHINATIONS OF THE SERB DEMOCRATIC PARTY IN PRE-WAR BOSNIA-HERZEGOVINA

Adis Maksić

International Burch University
Bosnia and Herzegovina
adis.maksic@ibu.edu.ba

Abstract

This article examines the role of the Serb Democratic Party of Bosnia-Herzegovina (SDS BiH) in the constitution of Bosnian Serbs as a palpable political group primed for violence, a process that took place in the two-year period preceding the 1992–1995 Bosnian War. In the November 1990 Bosnian elections, SDS BiH won a decisive majority of the vote of ethnic Serbs. Yet, SDS was not an ordinary political party. In the 16 months that followed the elections, it initiated a series of activities that eroded the power of BiH institutions to which it had been elected. SDS BiH declared its own organs superior to those of BiH and established exclusive control in Serb-majority areas. In early 1992, it united these areas into a single Serb Republic, formed an exclusively Serb armed force, and launched a campaign of murder and expulsion of non-Serbs from the territory under its control. This article examines discursive mobilization of affective sensibilities of ethnic Serbs as an important aspect of SDS's ability to gain a mass following of Bosnian Serbs for its ethno-territorial engineering. It offers a discussion of progressive homogenization of ethnic Serbs by looking at SDS's organizational origins and the evolving rhetorical strategies in the period from the party's inception until the onset of the war.

PERCEPTIONS TOWARDS IT SECURITY IN ONLINE BANKING BY STUDENTS OF ALBANIA

Ensar Mekić

International Burch University
Bosnia and Herzegovina
ensar.mekic@ibu.edu.ba

Nedim Makarević

Embassy of Bosnia and Herzegovina in Pakistan

Abstract

Handling money with no physical contact has been enormously developed in previous decades. However, developing new methods of handling money transactions online did not mean only new way of managing money for clients, but new ways of online robbery as well. Possibility of stealing money with no physical contact and any tangible evidence remaining after that is terrifying for clients. The purpose of this paper was to analyze perceptions of Albanian students who are using online banking, to provide insight into their view points and to create important set of information for all subjects active in banking industry. Results are collected and concluded after preparing survey based on six variables and specific questions assigned to each one of those variables. Survey was completed at high response rate. Even 207 Albanian students replied to survey. Results were analyzed and presented using descriptive statistics. Limitations of this research are relatively small sample and quite generic approach to problem. Accordingly, suggestions for future researches would be based on going more deeply into the issue and analyzing larger samples. This research empirically proved that students of Albania were slightly concerned and careful when dealing with online transactions. Since there is gap in literature when it comes to research dealing with IT-security of online banking in Albania, this article is not only unique, but it may be stimuli for new research with different approaches in the future.

Keywords: Perceptions, IT security, Survey, Online Banking, Clients, Albania

PERCEPTIONS OF STUDENTS TOWARDS QUALITY OF SERVICES AT PRIVATE HIGHER EDUCATION INSTITUTION IN BOSNIA AND HERZEGOVINA

Ensar Mekić

International Burch University
Bosnia and Herzegovina
ensar.mekic@ibu.edu.ba

Edin Smajić

International Burch University
Bosnia and Herzegovina
ensar.mekic@ibu.edu.ba

Aldina Rastoder

International Burch University
Bosnia and Herzegovina

Ekrem Nurović

International Burch University
Bosnia and Herzegovina

Abstract

The main objective of this exploratory study is to provide insights into perceptions of students towards quality of services at private higher education institution Star, located in B&H. A survey as a main instrument has been developed, and 448 students participated in the study. Main methodology used for purpose of data analysis is descriptive statistics. Findings indicated that students are either “slightly satisfied” or “satisfied” when it comes to nine aspects of quality at higher education Star. The highest satisfaction level appeared when it comes to “Quality of Academic Staff” which means that this is definitely one of important strengths of the institution. Even though students are still satisfied with “Quality of Campus”, the satisfaction level appeared to be lowest compared to their satisfaction with other variables examined throughout this study. Relevant recommendations for higher education institution are provided in the conclusion.

Keywords: Quality; Higher Education Institution (HEI); Quality Management; Quality Management System (QMS); Indicators

THE ROLE OF GOVERNMENT IN FOSTERING INNOVATION ACTIVITIES IN BOSNIA AND HERZEGOVINA

Nedim Čelebić

International Burch University
Bosnia and Herzegovina
nedim.celebic@ibu.edu.ba

Aziz Šunje

School of Economics and Business University of Sarajevo
Bosnia and Herzegovina

Ermin Cero

Abstract

This study researches state of the innovation system in Bosnia and Herzegovina, analyzed through role of the government in innovation activities. Study was based on combination of quantitative and qualitative research methodologies. Quantitative research resulted in comparative analysis of government support to innovation in Bosnia and Herzegovina with the same in Croatia and Sweden, based on selected groups of indicators. Best suited method that ensures detailed understanding of complex perceptions of government role in innovation systems within the economy is qualitative method, therefore the emphasis of this study was on the field research for the purpose of which eleven semi-structured interviews have been conducted and analyzed. Based on the results of the quantitative (comparative) and qualitative analysis of the collected data, we can conclude that government support and involvement in innovation activities in Bosnia and Herzegovina is almost insignificant, and administrative and legal framework in Bosnia and Herzegovina are unfavorable for the development of innovations.

Keywords: Innovation, Innovation Systems, Government, Bosnia and Herzegovina

ROLE OF PERCEPTION IN THE STRATEGIC MAKING PROCESS: CASE OF THE MEDIUM ENTERPRISES IN THE FEDERATION OF BOSNIA AND HERZEGOVINA

Nedim Čelebić

International Burch University
Bosnia and Herzegovina
nedim.celebic@ibu.edu.ba

Aziz Šunje

School of Economics and Business University of Sarajevo
Bosnia and Herzegovina

Dženan Kulović

University of Zenica
Bosnia and Herzegovina

Abstract

Middle management together with top management plays an important role in some of strategic decision-making phases. The purpose of the research is to test the theoretical model typology of four strategic roles by middle management in enterprises underdeveloped markets such as the Federation of Bosnia and Herzegovina. The aim is to explore the perceptions and knowledge of top and middle managers and their roles in the strategic decision making. To test the empirical model, examined 135 middle and top managers in 30 medium-sized enterprises in the Federation of Bosnia and Herzegovina. In order to test the stated hypothesis, we used correlation and linear regression as statistical methods. The study showed that middle and top managers do not have the same perception of the role of middle management in the strategic decision making. The analysis found that the perception of middle and top managers and role of middle management in the strategic decision making almost completely wrong.

Keywords: Strategic Decision Making; Middle Management; Medium Enterprises; Delegating; Perception;

THE IMPACTS OF ETHICAL CLIMATE TYPES ON NURSES' BEHAVIORS IN BOSNIA AND HERZEGOVINA

Muhammet Said Dinc

International Burch University
Bosnia and Herzegovina
m.sait.dinc@ibu.edu.ba

Alma Hurić

International Burch University
Bosnia and Herzegovina

Abstract

BACKGROUND:

The performance of nurses has become vital in hospitals. Some studies have suggested that nurses' perceptions of the ethical climate in their hospitals are related to higher job satisfaction and organizational commitment and in turn lessen the issue of nursing shortage.

HYPOTHESIS:

- (1) The ethical climate types "caring," "independent," "law and code," and "rules" have a significant positive impact on overall job satisfaction.*
- (2) The ethical climate types and overall job satisfaction have significant positive influences on normative and affective and significant negative influences on continuance commitment.*

RESEARCH DESIGN:

The study uses path analysis to understand which types of ethical climate impact overall job satisfaction. It also tries to find the effect of different types of ethical climate and overall job satisfaction on the components of organizational commitment. The relationships between variables were evaluated using factor analysis, reliability, descriptive statistics, correlations, and regression in this study.

PARTICIPANTS AND RESEARCH CONTEXT:

A total of 171 useful questionnaires were collected from nurses working in public and private hospitals in Bosnia and Herzegovina.

ETHICAL CONSIDERATIONS:

Formal research approval was obtained from the administration of each study hospital. Questionnaires with a cover letter were mailed to the hospitals that agreed to participate in the study. In the cover letter, the researchers explained the study purpose, encouraged nurses' voluntary participation, and guaranteed the anonymity of participants.

FINDINGS:

In the first path analyses, "rules" and "caring" climates significantly and positively affected overall job satisfaction. In the second one, while overall job satisfaction and "rules" climate significantly influenced normative commitment, "caring" climate and overall job satisfaction significantly affected affective commitment.

DISCUSSION:

The findings of the study have been convenient with the literature.

CONCLUSION:

Public and private hospitals can enhance overall job satisfaction and organizational commitment by altering the ethical climate of organizations. Hospital administrations should nurture caring and rule types of ethical climate which influence overall satisfaction. By this way, they could reduce nursing shortage.

Keywords: *Bosnia and Herzegovina; Ethical Climate Types; Hospitals; Organizational Commitment Components; Overall Job Satisfaction*

THE IMPACT OF PERSONAL ATTITUDE, SUBJECTIVE NORM, AND PERCEIVED BEHAVIOURAL CONTROL ON ENTREPRENEURIAL INTENTIONS OF WOMEN

Muhammet Said Dinc

International Burch University
Bosnia and Herzegovina
m.sait.dinc@ibu.edu.ba

Semira Budić

International Burch University
Bosnia and Herzegovina

Abstract

In the last decade, female entrepreneurship has been identified as one of the most important unutilised sources of economic growth. Entrepreneurial intention of women has become a key element in establishing a new business. The factors influencing entrepreneurial intention of women, particularly in developing countries, have attracted curiosity lot of attention. The purpose of the study is to examine the relationship between demographic variables, personal attitude, subjective norm, perceived behavioural control, and entrepreneurial intentions of women in Federation of Bosnia and Herzegovina. A total of 216 questionnaires were collected from women in two big cities in Bosnia: Tuzla and Sarajevo. Relationships between the variables were evaluated using factor analysis, reliability, correlations, descriptive statistics, and regression. The findings show a positive and significant influence of personal attitude and perceived behavioural control on entrepreneurial intention.

Keywords: *Entrepreneurial Intention of Women, Personal Attitude, Subjective Norm, Perceived Behavioural Control, Federation of Bosnia and Herzegovina*

ROLE OF TRANSFORMATIONAL LEADERSHIP ON EMPLOYEE’S JOB SATISFACTION: THE CASE OF PRIVATE UNIVERSITIES IN BOSNIA AND HERZEGOVINA

Muhammet Said Dinc

International Burch University
Bosnia and Herzegovina
m.sait.dinc@ibu.edu.ba

Hamidullah Bayram

International Burch University
Bosnia and Herzegovina

Abstract

The impact and type of effective leadership has a significant role in the improvement of organizational performance. This study has been conducted to indicate the importance of transformational leadership style on employees’ job satisfaction. The aim of this study is to describe the relationship between transformational leadership and employees’ job satisfaction at private universities in Bosnia and Herzegovina. A sample of 150 employees responded to a three-part instrument from two private universities in Sarajevo, the capital city of Bosnia and Herzegovina. Factor analysis, means, standard deviations, correlation and regression analysis were used to analyze the data. The findings determined that a moderate, positive and significant relationship exists between the dimensions transformational leadership and employees’ job satisfaction for both work of nature and operating condition. This study suggests that leaders at the private universities should pay more attention to findings new analytical ways for old problems and describing the demand of followers.

Keywords: Transformational Leadership; Job satisfaction and Bosnia and Herzegovina.

THE RELATIONSHIP AMONG ETHICAL CLIMATE, JOB SATISFACTION, AND ORGANIZATIONAL COMMITMENT: A STUDY OF NURSES IN BOSNIA AND HERZEGOVINA

Muhammet Said Dinc

International Burch University
Bosnia and Herzegovina
m.sait.dinc@ibu.edu.ba

Alma Hurić

International Burch University
Bosnia and Herzegovina

Aldina Rastoder

International Burch University
Bosnia and Herzegovina

Abstract

The performance of nurses has become vital in hospitals. Some studies have suggested that nurses' perceptions of the ethical climate in their hospitals have relationship with higher job satisfaction and organizational commitment and thus influence organizational performance. Although a plenty of studies support this relationship in developed countries, there is a scarce empirical evidence in developing countries. This study tries to examine the relationship among the ethical climate, job satisfaction and organizational commitment of nurses in Bosnia and Herzegovina which is a developing and transitional country. 171 useful questionnaires were collected from nurses who are working in public hospitals. The relationships among variables were evaluated by descriptive statistics and correlations. The study demonstrated a strong and significant relationship among nurses' job satisfaction, organizational commitment and ethical climate of hospitals.

Keywords: Bosnia and Herzegovina, Ethical Climate, Hospitals, Job Satisfaction, Organizational Commitment.

THE RELATIONSHIP AMONG ETHICAL LEADERSHIP AND ORGANIZATIONAL CITIZENSHIP BEHAVIOR: A STUDY OF PRIVATE PRIMARY AND HIGH SCHOOL TEACHERS IN BOSNIA AND HERZEGOVINA

Muhammet Said Dinc

International Burch University
Bosnia and Herzegovina
m.sait.dinc@ibu.edu.ba

Hatice Senyurt

International Burch University
Bosnia and Herzegovina

Abstract

As a recent modern concept, ethical leadership inspires researchers in many ways. Relations between ethical leadership and organizational citizenship behaviors, though a new field of study, is a big mine that requires some digging. The so-called extra-role or pro-social actions of employees is called the organizational citizenship behavior meaning that whatever extra job they do than what they are supposed to do is within Organizational Citizenship Behavior. Namely, how the school teacher's perception of his/her superior's ethical behavior influences the organizational citizenship behavior has evoked curiosity in the developing country context. This study tries to examine the effects of the ethical leadership on Organizational Citizenship Behavior of private primary and high school teachers in Bosnia and Herzegovina which is a developing and transitional country. Data collected from 80 teachers. The relationship among multiple variables is evaluated on the basis of factor analysis, reliability, descriptive statistics, correlations, and linear regression. The study showed a positive and strong influence of ethical leadership on teachers' organizational citizenship behavior in private primary and high schools.

Keywords: Organizational Citizenship Behavior, Ethical Leadership, Factor Analysis, Correlation, Regression

THE RELATIONSHIP AMONG TRANSFORMATIONAL LEADERSHIP, GENDER AND PERFORMANCE IN FINANCE SECTOR

Muhammet Said Dinc

International Burch University
Bosnia and Herzegovina
m.sait.dinc@ibu.edu.ba

Azra Prašović

International Burch University
Bosnia and Herzegovina

Abstract

In today's competitive business, the performance of employees has become vital in finance sector. Some studies have suggested that employees' perceptions of the transformational leadership and gender in their organizations have relationship with organizational performance. Although a plenty of studies support this relationship in developed countries, there is a scarce empirical evidence in developing countries. This study tries to examine the effects of the transformational leadership and gender perceptions on performance in Bosnia and Herzegovina which is a developing and transitional country. Questionnaires will be distributed to 150 employees in finance sector. The relationships among variables will be evaluated by factor analysis, reliability, descriptive statistics, correlations, and regression.

Keywords: Bosnia and Herzegovina, Finance Sector, Gender, Transformational Leadership

HOW WORK-LIFE BALANCE AND WORK VALUES DIFFER FROM GENERATION TO GENERATION: AN EXPLORATORY STUDY

Muhammet Said Dinc

International Burch University

Bosnia and Herzegovina

m.sait.dinc@ibu.edu.ba

Muzaffer Aydemir

Yildiz Technical University

Turkey

Mehmet Çağlar

Abstract

Today many workers from different generations work together in the same businesses and workplaces. Since different generations have different characteristics and their expectations from work and life differ from each other, generational differences make it hard to manage human resources of businesses. Allocation of human resources plays a key role for an effective human resources management. Thus, management needs to know expectations and motivators of generational cohorts for an effective management. The purpose of this study is to investigate whether there are differences among generations, which are " Traditionalist ", " Baby Boomers ", " Generation X " and " Generation Y ", in their " Work-life Balance " and " Work Values ". A study was carried out in different companies among 842 workers. The data was gathered with a questionnaire. The analysis results briefly show that generational differences have impact on workers' work values but do not on their work-life balances.

THE RELATIONSHIP AMONG PERSONAL BACKGROUND, PERSONALITY TRAITS, ENVIRONMENTAL FACTORS AND ENTREPRENEURIAL INTENSION OF WOMEN IN NORTHERN MONTENEGRO

Muhammet Said Dinc

International Burch University
Bosnia and Herzegovina
m.sait.dinc@ibu.edu.ba

Minela Hadžić

International Burch University
Bosnia and Herzegovina

Abstract

Entrepreneurs are imperative for the long-term economic growth of every country. Researchers are trying to explain how important entrepreneurial intention is by taking different factors in considerations. This paper will discuss three most important groups of factors affecting entrepreneurial intention of unemployed women in the north of Montenegro. Based on literature review, those factors are personal background, personality traits and environmental groups of factors. In this study, focus will be on four factors from each group which are perceived as most important according to researchers. The study will provide new framework in this field. The main research focus will be on women since majority of unemployed people in the north of the country is women whose small proportion is entrepreneur.

Keywords: *Entrepreneurs, Entrepreneurial intention, Unemployed Women, Montenegro*

IMPACT OF A BRAND ON CONSUMER DECISION MAKING PROCESS

Mersid Poturak

International Burch University
Bosnia and Herzegovina
mersid.poturak@ibu.edu.ba

Sulejman Hibić

International Burch University
Bosnia and Herzegovina

Abstract

With the modern development of economics and marketing, brands are having a more important place in our lives each day. We may neglect it, but we all find brands extremely attractive, whether it is because they make us feel wealthier or more self-confident, because we think they have a higher quality than generic ones, or for any other reason. Inspired by this psychological impact of brands on life and consumers, in this case consumer purchasing, the purpose of this article was to find out whether and how brands impact consumers' decision-making processes and do they (and why) prefer branded products over generic. The data for this article was collected in the form of an online survey. 225 respondents took part in filling out the survey in the period of one month. 125 of the respondents were male, while 100 were female, all between the ages of 18 to 60. The results of the survey show that there is a high impact of branding on consumer decision-making processes and their purchasing decisions. More precisely said, consumers prefer buying branded products to generic for many reasons, and their choice is affected by the status of the product.

Keywords: Brands, Consumer Behavior, Consumer Decision-Making Process.

EFFECTS OF SOCIAL MEDIA COMMUNICATION ON BRAND EQUITY AND BRAND PURCHASE INTENTION: A CASE STUDY ON DOMESTIC BRANDS IN BOSNIA AND HERZEGOVINA

Mersid Poturak

International Burch University
Bosnia and Herzegovina
mersid.poturak@ibu.edu.ba

Sumeja Softić

International Burch University
Bosnia and Herzegovina

Abstract

Social media is forming an increasingly central part of how companies communicate their marketing strategies to their customers. Online communities carry a strong and influential voice, and there is much to be gained from engaging directly with people through these channels – whether it is reaching and keeping existing customers or acquiring new ones. In light of such positive ground for social media this study aims to provide an empirical analysis of the impact social media communication has on brand equity and purchase intention. A systematic literature review has been conducted in order to understand how the dimensions of social media create word of mouth i.e. electronic word of mouth (E-WOM) on social media platforms and how this E-WOM further influence brand equity and customers' purchase intention of domestic brands in Bosnia and Herzegovina. 320 data sets were generated through a standardized online-survey and analyzed in SPSS. The results of the empirical study showed that both firm-created and user generated social media communication influence brand equity, consequently impacting brand purchase intention.

Keywords: Social Media Communication, E-WOM, Brand Equity, Purchase Intention, Bosnia and Herzegovina

HUMAN CAPITAL AND ECONOMIC DEVELOPMENT REVIEW OF WHAT WAS STUDIED AND WHERE WAS RESEARCHED

Nereida Hadziahmetović

International Burch University

Bosnia and Herzegovina

nereida.hadziahmetovic@ibu.edu.ba

Abstract

The main aim of this study is to define the most researched topics and geographical locations and the most active authors and institutions in Human Capital and Economic Development research area. 317 articles that published between 2007 and 2014 from 5 different journals with Social Scientific Citation Index (SSCI) were examined. This study also explores relation between research topics and researched countries and why some topics attracted more attention than others. It is found that some topics and geographic locations were researched more than others. Authors identified topics that were researched less or not researched as well as geographic locations. Proposal for future study is discussed according to results of analysis.

Keywords: Human Capital, Economic Development, Research Topics, Research Geographical Location.

KNOWLEDGE AND PROJECT MANAGEMENT: A SHARED APPROACH TO IMPROVE PERFORMANCE

Meliha Handžić

International Burch University
Bosnia and Herzegovina
meliha.handzic@ibu.edu.ba

Antonio Bassi

Abstract

This book argues that by integrating effective knowledge management (KM) with project management (PM), the overall project success rate can be improved significantly. It brings together the latest ideas and research on shared approaches to improve performance based on the research and experience of academics and practitioners. The structured collection of articles presents novel theoretical approaches and clear empirical evidence of the value of integrating the two distinct fields. It enables readers to better understand the need to merge KM with PM and appreciate the benefits. It also offers researchers an idea of what lies ahead and how to get there, and helps practitioners develop more suitable KM solutions for successful project outcomes.

KNOWLEDGE MANAGEMENT SELECTION MODEL FOR PROJECT MANAGEMENT

Meliha Handžić

International Burch University
Bosnia and Herzegovina
meliha.handzic@ibu.edu.ba

Abstract

This chapter proposes and empirically tests a contingency knowledge management (KM) selection model for project management (PM). Essentially, the proposed model posits a mediating role of project factors in the choice and impact of KM on project success. The evidence from two empirical studies provide full support for the contingency model and its proposition that the appropriate KM for PM depends upon project complexity. In particular, the empirical findings show that with increased project complexity, customer-related intellectual capital (IC) and personalization KM strategy tend to have greater importance for project success than team or process IC and codification KM strategy. These findings contribute valuable insights for researchers and provide useful guidance for project managers. The chapter also suggests plausible directions for further research to address current limitations.

Keywords: Knowledge Management, Project Management, Intellectual Capital, Selection Model, Project Complexity, KM Strategy, Project IC, Project Success

AN EMPIRICAL INVESTIGATION OF THE RELATIONSHIP BETWEEN INTELLECTUAL CAPITAL AND PROJECT SUCCESS

Meliha Handžić

International Burch University
Bosnia and Herzegovina
meliha.handzic@ibu.edu.ba

Nermina Durmić

International Burch University
Bosnia and Herzegovina

Adnan Kraljić

International Burch University
Bosnia and Herzegovina)

Tarik Kraljić

International Burch University
Bosnia and Herzegovina

Abstract

Purpose – The purpose of this paper is to empirically investigate the relationship between project-specific intellectual capital (IC) and project success in the context of information technology (IT) projects

Design/methodology/approach – Using data collected from surveys of 603 IT professionals across a variety of projects, the authors constructed a structural (structural equation model) model in AMOS to examine the relationships between three dimensions of project-specific IC (project team, project customer and project process) and project success

Findings – The empirical results support the proposition that IC has a positive impact on project success, and thus may be a good indicator of future projects' performance. More importantly, the authors found out an important mediating role of a project's structural capital (process) in exploiting its human (team) and relational (customer) capital for realising project success.

Research limitations/implications – Interpretation of current results should be considered in light of the following methodological limitations: convenient rather than systematic sampling, use of previously untested measures and prevailing European subjects. Practical implications

– These results suggest that project-based organisations need to invest heavily in their project

workforce talent and then translate it into superior project practices in order to produce successful IT projects. They also need to maintain close relationships with their project customers and involve them during the entire project process. Originality/value – The current empirical evidence extends the understanding of the role of IC in improving project success and thus helps project-based organisations create and maintain competitive advantage in emerging economies.

Keywords: *Project Management, Surveys, Knowledge Management, Intellectual Capital, Empirical Study, Project Success*

A CONTINGENCY APPROACH TO KNOWLEDGE MANAGEMENT: FINDING THE BEST FIT

Meliha Handžić

International Burch University
Bosnia and Herzegovina
melihahandzic@ibu.edu.ba

Muhammed Kürşad Özlen

Nermina Durmić

International Burch University
Bosnia and Herzegovina

Abstract

A contingency perspective of knowledge management recognises the need for a fit between knowledge management solutions (KMS) and decision making contexts which they support. In order to determine the best fit, a field survey was carried out to investigate the impact of two different types of KMS (technical and social) on decision makers' behaviour and performance in different decision contexts (simple and complex). The results provide partial support for the contingency view. As expected, the study identified social KMS as the best fit for complex contexts, based on subjects' superior performance from comparable adoption of both KMS. In contrast, the study identified that both KMS were an equally good fit for simple contexts, based on similar levels of subjects' performance, but social KMS was preferred in terms of adoption. These findings contribute to much needed empirical evidence for research and provide useful guidance for practice. However, their limitations warrant further study.

Keywords: Contingency Perspective, Decision Context, Decision Performance, Knowledge Management Solution (KMS), Knowledge Processes

KNOWLEDGE MANAGEMENT MEETS HUMANITIES: A CASE STUDY OF DIPLOMATIC CORRESPONDENCE VISUALISATION

Meliha Handžić

International Burch University

Bosnia and Herzegovina

meliha.handzic@ibu.edu.ba

Senada Dizdar

University of Sarajevo

Bosnia and Herzegovina

Abstract

Purpose – The purpose of this paper is to address the role of knowledge management (KM) in the humanities. With rapidly increasing quantities of digital humanities data, there is a growing need for new KM methods for analysing and presenting big data. At the same time, humanities have to tackle the task of interpreting KM interventions on such data and their value for answering humanities research questions. Responding to the above challenges, this study was carried out to examine whether and how valuable visualisation of historic diplomatic letters was for interpreting and understanding the political context in which they were sent.

Design/methodology/approach – The research was carried out via focus group methodology. Firstly, 16 study participants completed individual visualisation exercises using several digital tools. These exercises involved identifying and recording the date, origin and destination places of 120 diplomatic letters known as "borderers' letters"; transforming these data into larger categories (countries, centuries); and presenting such classified digital data visually in the form of tables, graphs and maps. Secondly, the participants were divided into 2 focus groups where they discussed what they had learnt from their visualisation experience. Group notes were taken and analysed for content.

Originality/value – The study made two valuable contributions. Firstly, it opened up a new line of research that should benefit both KM and the humanities. More generally, it suggested that the increased scale of digital artefacts might offer new exciting possibilities and challenges for future scholarship in KM and different arts and sciences. Secondly, the study provided some positive preliminary evidence of the value of KM for the humanistic research and training. Specifically, in the case of diplomatic correspondence, the study showed how visualisation of the frequency, geography and timing of diplomatic letters could serve as a barometer of international relations.

Practical implications –This study implied that visualisation might change the nature of interaction and sharing of insights among historians and other humanities scholars. In 11th International Forum on Knowledge Asset Dynamics 1446 particular, the study suggested that spatial and temporal maps could tell a good story. However, these implications need to be interpreted with caution due to a number of limiting factors. Among these are: specific set of diplomatic letters, small sample size, and subjective choice of visualisation software. Future research is recommended to address these limitations and extend current research to other KM initiatives and their applications in other scholarly disciplines.

Keywords: Knowledge Management, Humanities, Visualisation, Diplomatic Correspondence, Focus Group

HETEROSKEDASTICITY CONSISTENT COVARIANCE MATRIX ESTIMATORS IN SMALL SAMPLES WITH HIGH LEVERAGE POINTS

Mehmet Orhan

International Burch University

Bosnia and Herzegovina

mehmet.orhan@ibu.edu.ba

Esra Şimşek

Abstract

The aim of this paper is to demonstrate the impact of high leverage observations on the performances of prominent and popular Heteroskedasticity-Consistent Covariance Matrix Estimators (HCCMEs) with the help of computer simulation. Firstly, we figure out high leverage observations, then remove them and recalculate the HCCMEs without these observations in order to compare the HCCME performances with and without high leverage points. We identify high leverage observations with the Minimum Covariance Determinant (MCD). We select from among different covariates and disturbance term variances from the related literature in simulation runs in order to compare the percentage difference between the expected value of the HCCME and true covariance matrix as well as the symmetric loss function. Our results revealed that the elimination of high leverage (high MCD distance) observations had improved the HCCME performances considerably and under some settings substantially, depending on the degree of leverage. We hope our theoretical findings will be benefited for practical purposes in applications.

Keywords: Heteroskedasticity-Consistent Covariance Matrix Estimator, HCCME, Robust Estimation, MCD, Monte Carlo, Simulation, Loss Functions

ETHICAL AND SYSTEMIC DILEMMAS OF CREDIT RATINGS

Mehmet Orhan

International Burch University
Bosnia and Herzegovina
mehmet.orhan@ibu.edu.ba

Hami Sakab

Harun Yükselc

Abstract

Criticism of credit rating processes and the practices of major credit rating agencies (CRAs) peaked following the latest global financial crisis. Therefore, this study reviews the relevant literature, details the credit rating mechanism, and examines the criticism surrounding the three largest credit agencies: Standard & Poor's Financial Services (S&P), Moody's Investors Service (Moody's), and Fitch Ratings. This study also focuses on the serious moral problems involved in credit rating processes and procedures and calls for more effective oversight of CRAs as well as the establishment of enforcement mechanisms. The overall purpose of this study is to present proposals that can mitigate such criticism and oversee the healthy and timely conduct of credit rating operations. The credit rating processes of Greece, Ireland, and the Republic of Cyprus, which were among the hardest hit by the global financial crisis, are specifically examined (using macroeconomic indicators) in order to highlight the problems of the ratings system. This study concludes by offering solutions to a number of identified problems, foremost among them being the small number of dominant players and the inaccuracies of the ratings.

Keywords: Credit Rating Agencies (CRAs), Global Financial Crisis, Sovereign Ratings, S&P, Moody's, Fitch Rating, Conflict of interests

BLACK SWAN STICKING OUT IN TURKISH BANKING SECTOR

Mehmet Orhan

International Burch University
Bosnia and Herzegovina
mehmet.orhan@ibu.edu.ba

Hasan Gocen

Halit Akturk

Abstract

This article explores different aspects of an extraordinary event in Turkish banking sector: politically motivated seizure of Bank Asya by the state. We present how political motives play a key role in such an exceptional expropriation ignoring pillars of economic freedom. The attitude of the governing Justice and Development Party (AKP) on democratization path of Turkey is presented for further elaboration to bring revealing insight. Financial statement of Asia Participation Bank Inc. (Bank Asya) is detailed to indicate absence of economic ground for seizure. Our analysis on Bank Asya along with references to similar events and their repercussions point out possible severe legal enforcements against government authorities with political more than justice concerns and prejudgment.

Keywords: Bank Asya, Seizure, Financial Statement, Banking Regulation and Supervision Agency, Savings Deposit Insurance Fund

II PART: Faculty of Engineering and Natural Sciences

CONGESTIVE HEART FAILURE DETECTION USING RANDOM FOREST CLASSIFIER

Zerina Mašetić

International Burch University
Bosnia and Herzegovina
zerina.masetic@ibu.edu.ba

Abdulhamit Subasi

Effat University
Saudi Arabia

Abstract

Background and objectives

Automatic electrocardiogram (ECG) heartbeat classification is substantial for diagnosing heart failure. The aim of this paper is to evaluate the effect of machine learning methods in creating the model which classifies normal and congestive heart failure (CHF) on the long-term ECG time series.

Methods

The study was performed in two phases: feature extraction and classification phase. In feature extraction phase, autoregressive (AR) Burg method is applied for extracting features. In classification phase, five different classifiers are examined namely, C4.5 decision tree, k-nearest neighbor, support vector machine, artificial neural networks and random forest classifier. The ECG signals were acquired from BIDMC Congestive Heart Failure and PTB Diagnostic ECG databases and classified by applying various experiments.

Results

The experimental results are evaluated in several statistical measures (sensitivity, specificity, accuracy, F-measure and ROC curve) and showed that the random forest method gives 100% classification accuracy.

Conclusions

Impressive performance of random forest method proves that it plays significant role in detecting congestive heart failure (CHF) and can be valuable in expressing knowledge useful in medicine.

Keywords: *Electrocardiogram (ECG), Congestive Heart Failure (CHF), Autoregressive (AR) Modeling, Machine Learning, Random Forest*

MALICIOUS WEB SITES DETECTION USING C4.5 DECISION TREE

Zerina Mašetić

International Burch University
Bosnia and Herzegovina
zerina.masetic@ibu.edu.ba

Abdulhamit Subasi

Effat University
Saudi Arabia

Abstract

The technology advancement poses the challenge to the cybercriminals for doing various online criminal acts, such as identity theft, extortion of money or simply, viruses and worms spreading. The common aim of the online criminals is to attract visitors to the Web site, which can be easily accessed by clicking on the URL. Blacklisting seems not to be the successful way of marking Web sites with the “bad” content, considering that many malicious Web sites are not blacklisted. The aim of this paper is to evaluate the ability of C4.5 decision tree classifier in detecting malicious Web sites, based on the features that characterize URLs. The classifier is evaluated through several performance evaluation criteria, namely accuracy, sensitivity, specificity and area under the ROC curve. C4.5 decision tree classifier achieved significant success in malicious Web sites detection, considering all four criteria (accuracy 96.5, sensitivity 96.4, specificity 96.5 and area under the curve 0.958).

Keywords: *Malicious Web Sites, blacklisting, URL, C4.5 Decision Tree*

SENSOR FUSION FOR SOLAR CAR ROUTE OPTIMIZATION

Mehrija Hasičić

International Burch University
Bosnia and Herzegovina
mehrija.hasicic@ibu.edu.ba

Damir Bilić

International Burch University
Bosnia and Herzegovina
damir.bilic@ibu.edu.ba

Harun Šiljak

International Burch University
Bosnia and Herzegovina
harun.siljak@ibu.edu.ba

Abstract

This paper focuses on sensor data management in the Solar Car Optimized Route Estimation (SCORE) system which is currently being developed. The data collection is split into two phases: the a priori phase related to the environment and the real time phase related to the solar vehicle. The hardware and software architecture for a priori phase is illustrated in detail, while the real time phase is discussed as a part of the embedded car computer. The full system description for SCORE is presented with guidelines for the future work and implementation of it.

Keywords: Vehicle Routing, Sensor Fusion, Solar Energy, Electric Vehicles, Geographic Information System, Navigation

MURDER ON THE EINSTEIN EXPRESS AND OTHER STORIES

Harun Šiljak

International Burch University
Bosnia and Herzegovina
harun.siljak@ibu.edu.ba

Abstract

Explores the boundaries of science and fiction in a refreshingly unconventional fashion. Includes stories of various fictional genres that incorporate topics from mathematics, physics and computer science.

OTPORNOST BETONSKIH KONSTRUKCIJA NA POŽAR

Sanin Džidić

International Burch University

Bosnia and Herzegovina

sanin.dzidic@ibu.edu.ba

Abstract

Knjiga je namijenjena studentima građevinskih i arhitektonskih fakulteta na predmetima iz oblasti otpornosti konstrukcija na požar u prvom dijelu, a u drugom dijelu izučavanju ponašanja i dokaza nosivosti betonskih konstrukcija pod dejstvom požara na predmetima iz oblasti betonskih konstrukcija. Takođe je namijenjena i stručnjacima iz prakse u cilju razumjevanja problematike, ali i uputstava kako provjeriti i dokazati nosivost betonskih elemenata i konstrukcija izloženih dejstvu požara. Ovo je tim važnije, jer evropske norme za proračun konstrukcija - Eurokodovi, obavezno zahtijevaju dokaz nosivosti konstrukcija na požar, pa čak i propisi u Bosni i Hercegovini. Međutim, autor u svojoj dugogodišnjoj praksi do sada nije vidio nijedan projekat konstrukcije koji sadrži ovakav proračun, osim ukoliko je rađen u naučne ili posebne svrhe, pa čak ni primjenu najjednostavnijih tabelarnih metoda. Požar se može desiti bilo kada i bilo gdje. Uzimajući u obzir da naše objekte gradimo za eksploatacioni vijek 50, 100 ili 200 godina, velika je vjerovatnoća da će ti objekti prije ili kasnije biti izloženi požarnom dejstvu. U tom smislu, a i u skladu sa važećom regulativom, obavezni smo dovesti požarno razmatranje konstrukcije u istu ravan sa seizmičkim dejstvima i dejstvima vjetra i snijega na konstrukciju. Ovo nas obavezuje da u konstruktorsku proračunsku projektantsku praksu, u sklopu projektne dokumentacije obavezano uvedemo dokaz otpornosti na požar (kod svih objekata gdje postoji rizik od pojave požara). Paralelno se mora djelovati i u području izvođačke prakse. Uzimajući u obzir da je vrlo malo literature i knjiga iz ove uže oblasti općenito, a posebno u regiji i Bosni i Hercegovini, cilj ove knjige je da stručnjacima i studentima pomogne u razumjevanju važnosti ove problematike, kao i rješavanju konkretnih problema. U tom smislu, u knjizi su obrađene tri metode u svijetu za provjeru otpornosti na požar betonskih elemenata i konstrukcija, sa jednim brojem konkretnih radnih primjera nakon svake metode.

OPTIMIZATION OF DESIGN SOLUTIONS OF PRESTRESSED CONCRETE INDUSTRIAL HALLS WITH MAIN GIRDERS “I TYPE” ACCORDING TO EUROCODE 2 FOR SERVICEABILITY AND DURABILITY

Sanin Džidić

International Burch University
Bosnia and Herzegovina
sanin.dzidic@ibu.edu.ba

Husein Okugić

Abstract

Research focus of this paper are stresses in reinforcement and tendons, stresses in concrete, deflections and cracks of the prestressed girders of “Type I”. The goal is to optimize the span of such girder for the same amount of reinforcing steel and tendons. Crack widths that are larger than permitted can cause deterioration of the structure (steel corrosion, leakage of liquid or gas) while the large deflections can compromise the functionality and appearance of the structure. Serviceability Limit State (SLS) is a condition in which construction ceases to meet the specific requirements of serviceability (deflection, crack width). In order for industrial halls to satisfy requirements for safety, deflections and cracks must be within acceptable limits during the service life of the structure.

COMPARISON OF THE APPLICATION OF THE CRITICAL PATH ANALYSIS AND GANTT CHART APPROACH IN PROJECT MANAGEMENT

Omar Kapetanović

International Burch University
Bosnia and Herzegovina
omar.kapetanovic@ibu.edu.ba

Sarina Šabotić

International Burch University
Bosnia and Herzegovina

Sanin Džidić

International Burch University
Bosnia and Herzegovina
sanin.dzidic@ibu.edu.ba

Emir Bračković

International Burch University
Bosnia and Herzegovina

Abstract

Gantt charts are commonly used in Bosnia and Herzegovina as a planning basis for the construction of engineering and architectural structures. Although very simple and transparent in everyday use, they have a range of shortcomings. The main disadvantage of a Gantt chart is lack of interdependence between individual activities. Interdependence is established subjectively, based upon empirical experience of planners or project managers. Therefore, it is difficult to perform correct managerial decisions, which ultimately leads to serious problems in the implementation of the project, construction delays, and even waste of resources, including suffering of contractual penalties. Critical path analysis establishes dependencies between activities in the implementation of the project, which leads to a sequence of activities on the critical path, as well as the identification of activities that can have a float in project implementation. Based on this technique, it is possible to make appropriate

managerial decisions and intervene in a technically and managerial correct manner, based on the performance data. This paper and the conclusions of the analysis on four case studies will justify the application of the critical path analysis versus Gantt chart planning in project management.

Keywords: Planning, Gannt Chart, Critical Path Analysis, Project Management

STRAW – CONSTRUCTION MATERIAL OF HISTORY AND FUTURE, SUSTAINABLE ARCHITECTURE AND STRUCTURAL ENGINEERING

Sanela Klarić

International Burch University
Bosnia and Herzegovina
sanela.klaric@ibu.edu.ba

Sanin Džidić

International Burch University
Bosnia and Herzegovina
sanin.dzidic@ibu.edu.ba

Maja Popovac Roso

University Dzemal Bijedic Mostar
Bosnia and Herzegovina

Abstract

Climate change entails a change of lifestyle. People all around the globe are struggling with the impact of climate change. Construction industry in total spends 45% of the energy and 50% of materials, which directly influences the carbon dioxide (CO₂) accumulation in the atmosphere. Sustainability and energy efficiency of buildings is assessed not only on the quality of thermal insulation and energy consumption, but also on the basis of primary energy demand, CO₂ emissions reduction and ecological characteristics of the materials used. Straw is a material that received considerable attention as a natural, energy and environmentally sustainable material in the last period of building sustainable creation. Using straw as a construction material creates conditions for reducing application of other building materials, whose properties or production process can have a negative impact on the environment. This research analyzes and presents the straw as a building material in terms of sustainable architecture, but also about its mechanical properties and fire resistance in terms of structural engineering, which all contribute to the implementation, protection and potential of this construction material for socio-economic development of Bosnia and Herzegovina and inclusion in modern trends of sustainable development.

Keywords: *Straw, Straw-Bale, Sustainable Building, U-value, Fire Resistance*

OPTIMIZATION OF DESIGN SOLUTIONS OF MAIN GIRDERS OF "TYPE A" FOR THE PREFABRICATED PRESTRESSED CONCRETE INDUSTRIAL HALLS FOR SERVICEABILITY AND DURABILITY ACCORDING TO EC2

Sanin Džidić

International Burch University
Bosnia and Herzegovina
sanin.dzidic@ibu.edu.ba

Husein Okugić

Abstract

Research focus of this paper are stresses in concrete, reinforcement and tendons, cracks and deflections of the prestressed girders of "Type A" in order to optimize the span of such girder for the same amount of tendons and reinforcing steel. Serviceability Limit State (SLS) is a condition in which construction ceases to meet the specific requirements of serviceability (deflection, crack width). The large deflections can compromise the functionality and appearance of the structure. Crack widths that are larger than permitted can cause deterioration of the structure (steel corrosion, leakage of liquid or gas). Deflections and cracks must be within acceptable limits during the service life of the industrial halls for their safety and durability.

Keywords: Serviceability Limit State, Stress, Crack, Deflection, Prestressed Girder

JAJCE – TOWN OF SYMBIOSIS BETWEEN NATURE AND BUILT ENVIRONMENT-ST. LUKA’S TOWER - ARCHITECTURAL AND STRUCTURAL LANDMARK

Omar Kapetanović

International Burch University
Bosnia and Herzegovina
omar.kapetanovic@ibu.edu.ba

Sanin Džidić

International Burch University
Bosnia and Herzegovina
sanin.dzidic@ibu.edu.ba

Abstract

City of Jajce have emerged and developed from prehistoric times, developing unique connection with environment which had a great influence on built heritage. From that symbiosis of given and created conditions both cultural and historical very significant and diverse heritage has been preserved. Jajce represents unique phenomena of medieval city which had kept a lot of his authenticity. Remains of previous cultures date back to Roman period. Cultural monuments from different historical periods represent valuable elements of urbanism and architecture formed in collaboration with natural environment and they build strong Genius Loci. This unique phenomena has been recognized and listed as part of world heritage of all human race. In that manner Jajce as a city should be perceived and treated in further development.

Keywords: Jajce, Cultural Heritage, Historical Heritage, Architecture Urbanism, Otoman period, Austro-Hungarian period, Genius Loci

UTICAJ DEBLJINE POKROVNOG SLOJA BETONA NA OTPORNOST NA POŽAR ARMIRANOBETONSKIH PLOČA PREMA EUROCODE 2

Sanin Džidić

International Burch University
Bosnia and Herzegovina
sanin.dzidic@ibu.edu.ba

Hamdo Mešić

University of Bihać
Bosnia and Herzegovina

Abstract

The analysis presented in this paper considers fire resistance of the RC slabs as the most fire sensitive RC elements depending on the thickness of concrete cover. The fire resistance of the uniaxial simply supported slabs has been analyzed by variation of span, slab depth, concrete class and concrete cover, according to the Eurocode 2 methods. By establishing the correlation of thickness of concrete cover and concrete properties as material and RC slabs, it is feasible to achieve optimal and rational design solutions, aiming to increase their fire resistance. This paper shows that fire resistance of concrete slabs is a direct function of the applied design selections in determination of slab depth, area and arrangements of reinforcement, concrete cover and actual construction issues at the site.

Keywords: Armiranobetonska ploča, Otpornost na požar, Pokrovni sloj betona

APPLICATION OF FRACTAL GEOMETRY PRINCIPLES IN ARCHITECTURAL ORNAMENTS AND THE USE OF FRACTAL ANALYSIS SOFTWARES FOR RECONSTRUCTION OF ARCHITECTURAL ORNAMENTS

Emina Zejnilović

International Burch University
Bosnia and Herzegovina
emina.zejnilovic@ibu.edu.ba

Lejla Kargić

University of Travnik
Bosnia and Herzegovina

Abstract

The fractal geometry is a relatively new research subject in theory of architecture, but its principles are in use for centuries. Among the witness are numerous architectural masterpieces around the world and various ornaments found in different cultures, which have been inevitably subjected to changes and damages caused by numerous factors. It was common practice that partially lost ornaments were either reconstructed according to the existence of equal or similar ornaments in another object, or according to the existing drawings from that period upon which the restorators based their knowledge and skills.

This paper investigates the presence of fractal geometry principles in architectural ornaments of the Persian architecture, suggesting it as a possible tool in providing solutions for very accurate reconstruction of damaged samples. Methodology used is the analysis of specific ornaments plates was the box counting technique via fractal analysis software.

Based on the obtained data, this paper aims to investigate and conclude the adequacy and possibilities of application of fractal analysis softwares in the reconstruction of architectural ornaments, especially in problematic cases where there is no relevant data for quality reconstruction by using traditional techniques.

CULTURAL REFLECTIONS ON ARCHITECTURAL SPACE: THE CASE OF SINGLE RESIDENTIAL UNIT

Emina Zejnilović

International Burch University
Bosnia and Herzegovina
emina.zejnilovic@ibu.edu.ba

Erna Husukić

International Burch University
Bosnia and Herzegovina
erna.husukic@ibu.edu.ba

Abstract

*Focus of this paper is the "environmental quality profile" as Rapoport defines the architectural response to the mentioned particular system of cultural settings. It offers an insight into the correlation of cultural mechanisms that influence creation of space and visual experience, through discussion of central space in housing architecture. Examples of single residential units within different cultures of Islamic societies are analyzed, aiming to underpin the correlation between the space and social *modus operandi* that deem that space necessary. Impact of religious and cultural beliefs related to social dynamics of living on the physicality of architecture is explored as well as the necessity of central spaces for positive visual and spatial experience. Central space as the focal point of the house is interpreted from architectural, social and religious aspects. Additionally, being that the correlation between architecture and culture is reciprocal, a reflection is made on how architectural space and decisions support, influence, and change social dynamics.*

MOTIVATION OF ENGINEERS IN CONSTRUCTION INDUSTRY

Ahmed El Sayed

International Burch University

Bosnia and Herzegovina

ahmed.elsayed@ibu.edu.ba

Ismail Hakki Demir

Sakarya Üniversitesi

Turkey

Abstract

Engineers and workers in construction industry suffers from the lack of motivation, which generally cause late in project submission, conflicts in work, and depression, as well as changing the workplace more often. This paper reviewed the lack of motivation of engineers in Construction Industry based on reviewing case studies worldwide. Studies proved that generally the lack of communication between directors and workers, as well as the human development factors that are related to the age of workers plays a major factor in the level of satisfaction. This papers concludes that a new motivation approach to Engineers in Construction Industry should be created and used, and such approach should include more factors that affects the motivation of Engineers.

Keywords: Motivation, Needs Theories, Construction Industry, Human Behaviour, Job Satisfaction.

CHARACTERISTICS OF VANCOMYCIN-RESISTANT ENTEROCOCCUS STRAINS IN THE WEST BALKANS: A FIRST REPORT

Elma Ferić Bojić

International Burch University
Bosnia and Herzegovina
elma.feric@ibu.edu.ba

Monia Avdić Ibrišimović

International Burch University
Bosnia and Herzegovina
monia.avdic@ibu.edu.ba

Mirsada Hukić

International Burch University
Bosnia and Herzegovina
mirsada.hukic@ibu.edu.ba

Sanja Jakovac

Sveučilišna klinička bolnica Mostar
Bosnia and Herzegovina

Borka Tutiš

Maja Ostojić

Abstract

Vancomycin-resistant enterococci are among the major causes of nosocomial infections and represent a growing problem in many European countries. Among the most common enterococcal isolates, Enterococcus faecium is considered to be the reservoir of VanA and VanB-mediated resistance to glycopeptides. Enterococci with VanA-mediated resistance can transfer resistance genes to other enterococci and gram-positive bacteria. Hence, monitoring and surveillance of vancomycin-resistant enterococci (VREs) are crucial for the prevention of the spread of glycopeptide resistance. No reports

have yet been published that document the resistance rates and typization of VREs in the region of Bosnia and Herzegovina as well as Croatia. In this study, 64 clinical enterococcal strains that were isolated in clinical centers, Mostar, Sarajevo, and Zagreb, were studied and findings regarding characteristics of vancomycin-resistant strains found in the West Balkan region are reported for the first time. All of the strains were identified using conventional phenotypic methods, and the resistance to glycopeptides was determined using the disk diffusion method, Vitek 2, and genotypic Enterococcus assay. The results of genotyping showed that 40 strains were identified as VREs (30% Enterococcus faecalis and 70% E. faecium), while the sensitivity of the phenotypic methods was 87.5%. Furthermore, VanA and VanB resistance types were found in Bosnia and Herzegovina and Croatia, with slightly higher prevalence of the latter (72.5%) over the former (27.5%).

Keywords: Enterococcus, VRE, Genotyping, Resistance

A NOVEL HYBRID CONTOURING CONTROL METHOD FOR 3-DOF ROBOTIC MANIPULATORS

Tarik Uzunović

International Burch University
Bosnia and Herzegovina
tarik.uzunovic@ibu.edu.ba

Eray A. Baran

Sabancı University
Turkey

Edin Golubović

Sabancı University
Turkey

Asif Šabanović

Sabancı University
Turkey

Abstract

A novel controller for three-dimensional contouring control of three-degrees-of-freedom (3-DOF) robotic manipulators is presented in this paper. The proposed controller comprises of an independent joint controller, designed in the configuration space, and a sliding mode controller that enforces desired dynamics for the tracking error projections to the Frenet-Serret frame. Therefore, the presented controller has a hybrid structure and it is named as hybrid contouring controller. In this paper, contour tracking with constant magnitude tangential velocity is discussed. Reference trajectory is generated using the time based spline approximation in order to provide a smooth reference path. The proposed hybrid contouring controller was experimentally compared with the independent joint controller that is designed in the acceleration control framework with disturbance observer. Experimental results, undertaken on a delta robot, showed that hybrid contouring controller outperforms independent joint control architecture.

Keywords: *Contouring Control, Hybrid Contouring Controller, Coordinate Transformation, Frenet-Serret Frame, Acceleration Control, Disturbance Observer, Sliding Mode Control, Spline Approximation, Robotic Manipulator*

EMBEDDED AUTOMATIC SCHEDULING SYSTEM

Damir Bilić

International Burch University
Bosnia and Herzegovina
damir.bilic@ibu.edu.ba

Tarik Uzunović

International Burch University
Bosnia and Herzegovina
tarik.uzunovic@ibu.edu.ba

Abstract

This paper describes an embedded system for the automation of scheduling systems such as school bells, factory shift changes, military drills etc. The system consists of two parts: a remote node used for remote control and setup of the system and the real time actuator node which controls a physical object, for example, a bell system. The hardware and software structure are illustrated in detail for both parts of the system through the implementation as an automatic school bell system.

Keywords: School bell system, Embedded system, Automated bell system

FORCE CONTROL OF PIEZOELECTRIC WALKER

Tarik Uzunović

International Burch University
Bosnia and Herzegovina
tarik.uzunovic@ibu.edu.ba

Edin Golubović

Sabancı University
Turkey

Asif Šabanović

Sabancı University
Turkey

Abstract

This paper is concerned with the force control of a walking piezoelectric motor, a commercially available Piezo LEGS motor. The motor is capable of providing high precision positioning control on nanometer scale, but also relatively high forces up to 6 N. The proposed force control algorithm is very simple, but effective, and it is based on a recently presented coordinate transformation. The transformation allows definition of the driving waveforms for the motor according to a desired motion of the motor legs in the plane of motion. Such a possibility opens a path for creating the y-direction interaction force between the motor legs and the rod which is enough to ensure no relative motion between the legs and the rod. Once that is achieved, one can control the x-direction force imposed by the motor rod on its environment. The presented force control scheme has been successfully validated through a series of experiments.

Keywords: Legged Locomotion, Force, Force Control, Rolling Bearings, Actuators, Springs, Voltage Control

FORMATION CONTROL OF DIFFERENTIAL-DRIVE MOBILE ROBOTS IN THE FRAMEWORK OF FUNCTIONALLY RELATED SYSTEMS

Tarik Uzunović

International Burch University
Bosnia and Herzegovina
tarik.uzunovic@ibu.edu.ba

Asif Šabanović

Sabancı University
Turkey

Abstract

A novel approach for formation control of differential-drive mobile robots is presented in this paper. The control design is done in the framework of functionally related systems. Functionally related systems are the systems that are 'virtually' interconnected. The term 'virtually' denotes the situation in which the states or outputs of otherwise separated systems are functionally related to each other. If a formation of mobile robots is analyzed, it can be considered as a group of functionally related systems. Therefore, formation control of the robots can be synthesized in the mentioned framework.

Keywords: *Functionally Related Systems, Differential-Drive Mobile Robots, Formation Control*

DSC-BASED IMPLEMENTATION FOR POWER CONTROL OF DFIG IN MICROGRID APPLICATIONS

Tarik Uzunović

International Burch University
Bosnia and Herzegovina
tarik.uzunovic@ibu.edu.ba

Burak Soner

Sabancı University
Turkey

Emre Ozsoy

Istanbul Technical University
Turkey

Edin Golubović

Sabancı University
Turkey

Asif Šabanović

Sabancı University
Turkey

Abstract

This paper presents a compact and low cost digital signal controller (DSC) based implementation for power control of a doubly fed induction generator (DFIG) based wind energy setup for micro-grid applications. The experimental setup consists of a back to back converter, a 1.1 kW DFIG and two low cost, industry standard DSCs. Stator active power and reactive power are controlled by means of the rotor currents. Decoupled components of the rotor current in a rotating frame are controlled by a robust, disturbance observer based control structure. The proposed controller was validated through experiments.

Keywords: Digital Signal Controller, DFIG, Microgrid, Power Control, Vector Control

CULTURAL REFLECTIONS ON ARCHITECTURAL SPACE: THE CASE OF SINGLE RESIDENTIAL UNIT

Emina Zejnilović

International Burch University
Bosnia and Herzegovina
emina.zejnilovic@ibu.edu.ba

Erna Husukić

International Burch University
Bosnia and Herzegovina
erna.husukic@ibu.edu.ba

Abstract

*Focus of this paper is the "environmental quality profile" as Rapoport defines the architectural response to the mentioned particular system of cultural settings. It offers an insight into the correlation of cultural mechanisms that influence creation of space and visual experience, through discussion of central space in housing architecture. Examples of single residential units within different cultures of Islamic societies are analyzed, aiming to underpin the correlation between the space and social *modus operandi* that deem that space necessary. Impact of religious and cultural beliefs related to social dynamics of living on the physicality of architecture is explored as well as the necessity of central spaces for positive visual and spatial experience. Central space as the focal point of the house is interpreted from architectural, social and religious aspects. Additionally, being that the correlation between architecture and culture is reciprocal, a reflection is made on how architectural space and decisions support, influence, and change social dynamics.*

EVALUATION OF THE BROWNFIELD REGENERATION PROCESS - CASE STUDY OF SARAJEVO, BOSNIA AND HERZEGOVINA

Ajla Gegić

International Burch University
Bosnia and Herzegovina
ajla.gegic@ibu.edu.ba

Erna Husukić

International Burch University
Bosnia and Herzegovina
erna.husukic@ibu.edu.ba

Abstract

Brownfield land is both a problem and a lost opportunity, since the sites can have a negative impact on the surrounding area and community and hinder effective regeneration. Thus, regeneration of brownfields has gradually become an important challenge for regional and local development. The focus of this paper is to analyse brownfield issues in the city of Sarajevo with respect to the needs of the local community. The work particularly addressed a brownfield area exemplified in the Novi Grad municipality, which includes architectural and urban settings and is currently a main point of interest in the city of Sarajevo. The paper argues how functional clean-up of the site, reuse of abandoned area and analysis of the social impact on the local community could offer new alternatives in brownfield regeneration that stimulate development opportunities at numerous levels, including enhancing urban competitiveness and reducing urban sprawl.

SHEEP WOOL AS A CONSTRUCTION MATERIAL FOR ENERGY EFFICIENCY IMPROVEMENT

Sanela Klarić

International Burch University
Bosnia and Herzegovina
sanela.klaric@ibu.edu.ba

Azra Korjenic

Almedina Hadžić

Sinan Korjenić

Abstract

The building sector is responsible for 40% of the current CO₂ emissions as well as energy consumption. Sustainability and energy efficiency of buildings are currently being evaluated, not only based on thermal insulation qualities and energy demands, but also based on primary energy demand, CO₂ reductions and the ecological properties of the materials used. Therefore, in order to make buildings as sustainable as possible, it is crucial to maximize the use of ecological materials. This study explores alternative usage of sheep wool as a construction material beyond its traditional application in the textile industry. Another goal of this research was to study the feasibility of replacement of commonly used thermal insulations with natural and renewable materials which have better environmental and primary energy values. Building physics, energy and environmental characteristics were evaluated and compared based on hygrothermal simulation and ecological balance methods. The observations demonstrate that sheep wool, compared with mineral wool and calcium silicate, provides comparable thermal insulation characteristics, and in some applications even reveals better performance.

Keywords: Energy Efficiency; Primary Energy Reduction; CO₂ Reduction; Natural and Renewable Building Materials; Sheep wool; Hygrothermal simulation; Ecological balance method

ANALYSIS OF ONE EXAMPLE OF THE RESTORATION IN TERMS OF ENERGY EFFICIENCY REQUIREMENTS IN BOSNIA AND HERZEGOVINA

Sanela Klarić

International Burch University
Bosnia and Herzegovina
sanela.klaric@ibu.edu.ba

Adnan Novalić

International Burch University
Bosnia and Herzegovina
adnan.novalic@ibu.edu.ba

Lejla Kargić

University of Travnik
Bosnia and Herzegovina

Ajla Gegić

International Burch University
Bosnia and Herzegovina
ajla.gegic@ibu.edu.ba

Selvira Heldovac

International Burch University
Bosnia and Herzegovina
selvira.heldovac@ibu.edu.ba

Abstract

In 21st century, it is not enough to design delightful buildings, but to act in a responsible way towards the planet Earth. Supplies of natural resources are getting lower and it is necessary to turn to renewable sources. Cities and buildings are the top pollutants and energy consumers today. While European goals in terms of CO2 emission, primary energy and U values are set high, the actual situation varies from excellent to very poor examples of energy efficiency requirements application. " Energy performance certificate should also provide information about the actual impact of heating and cooling on the energy

*needs of the building, on its primary energy consumption and on its carbon dioxide emissions. " * The aim of this research paper is to analyze and present the current situation of the energy efficiency practice on objects restoration in Bosnia and Herzegovina, on example of Hotel Opal, located in Sarajevo under the continental climate. The materials used in construction elements of the building: walls and roof, as well as their thicknesses and places of origin were taken into account in calculating the CO₂ and SO₂ emissions, as well as primary energy values and global warming potential. Special attention was paid to the U values which are key determinants of energy efficiency of an object. A comparison has been made between in analysed case used and natural materials, such as sheep wool, mineral wool and straw and their according emissions. As one of the key critical components in sustainable building design are windows, the Appendix contains comparison of different materials used for windows frames. The findings show the amount of energy that can be saved if the trends in use of construction materials are changed. With respect to Bosnia and Herzegovina, the change in these trends would also imply benefits for development of different industries.*

Keywords: *Energy Efficiency, Restoration, U value, Natural insulation materials, Wall, Window, Roof, Brick, EPS, Sheep wool, CO₂, Primary energy, Global warming potential*

ADVANTAGES OF NATURAL RENEWABLE MATERIALS IN THE BUILDING SECTOR

Sanela Klarić

International Burch University
Bosnia and Herzegovina
sanela.klaric@ibu.edu.ba

Adnan Novalić

International Burch University
Bosnia and Herzegovina
adnan.novalic@ibu.edu.ba

Zedina Hujdur

International Burch University
Bosnia and Herzegovina
zedina.hujdur@ibu.edu.ba

Isminur Aybek

Amar Dautović

International Burch University
Bosnia and Herzegovina

Abstract

Architecture design today has become far more challenging than it once used to be. Both research and demand for ecological building materials have been growing rapidly, particularly for insulating materials from renewable resources. On the contrary, conventional design, constructions and materials are still predominantly used in the world, and particularly in Bosnia and Herzegovina and Turkey. In addition to the accustomed thermal insulation thickness and heating demand, architects need to design new or renovate existing structures in compliance with the primary energy demand, CO2 reductions, as well as ecological properties of building materials, and, in other words, take a holistic approach. The aim of this paper is to present a comparison between the use of conventional methods, constructions and materials and alternative solutions of renewable insulation materials application in wall

constructions. Conventional walls are predominantly made of cement, bricks, Styrofoam, plaster and paint. For innovative walls, however, materials used for a wall 1 are: brick, wood fibre insulation, plaster, coat render, and for wall 2: timber, sheep's wool insulation, brick, OSB board and plaster. The test results indicate the amount of primary energy and CO2 emission that could be saved if renewable materials are used not only for insulation but for the construction as well. Findings also show great demand for a new clean technology in brick production that will save energy and CO2 emission. Our findings also suggest that renewable materials have more ecological advantages and present fewer health risks.

Keywords: *Wall construction, Natural insulation materials, Primary energy, Global warming Potential, Health*

CHALLENGES AND POTENTIALS OF TRADITIONAL, NATURAL, RENEWABLE MATERIALS IN BOSNIA AND HERZEGOVINA

Sanela Klarić

International Burch University

Bosnia and Herzegovina

sanela.klaric@ibu.edu.ba

Abstract

The building sector is responsible for 40% of the current CO2 emissions as well as energy consumption. Sustainability and energy efficiency of buildings are currently being evaluated, not only based on thermal insulation qualities and energy demands, but also based on primary energy demand, CO2 reductions and the ecological properties of the materials used. Therefore, in order to make buildings as sustainable as possible, it is crucial to maximize the use of ecological materials. Could we replace commonly used thermal insulations with natural and renewable materials which have better environmental and primary energy values? Could natural and renewable material be driving forces for social-economic development of Bosnia and Herzegovina and region?

KONZERVATORSKE INTERVENCIJE NA OBJEKTIMA VERNAKULARNE ARHITEKTURE – PRIMJER BIŠĆEVIĆA KUĆE U MOSTARU

Sanela Klarić

International Burch University
Bosnia and Herzegovina
sanela.klaric@ibu.edu.ba

Maja Popovac Roso

University Dzemal Bijedic Mostar
Bosnia and Herzegovina

Amra Šarančić Logo

University of Sarajevo
Bosnia and Herzegovina

Abstract

Interventions observed in this paper are those of structural character. These interventions on cultural heritage buildings requires comparative analysis of structural problems and values of the heritage. The absence of one of the observed aspects may be considered as unethical approach. The work examines the complexity of conservation works on the buildings of cultural heritage, in particular those of vernacular architecture. As an example presented is the work of conservation and restoration of one of the most famous houses from the period of Ottoman rule Bišćević House in Mostar. Key words Conservation, structural interventions, vernacular architecture, Bišćević House, Mostar.

Keywords: Conservation, Structural interventions, Vernacular architecture, Bišćević House, Mostar

LUKOMIR – SINONIM BOSANSKOHERCEGOVAČKE VERNAKULARNE ARHITEKTURE

Sanela Klarić

International Burch University

Bosnia and Herzegovina

sanela.klaric@ibu.edu.ba

Boris Trapara

University of Sarajevo

Bosnia and Herzegovina

Maja Popovac Roso

University Dzemal Bijedic Mostar

Bosnia and Herzegovina

Abstract

Vernacular architecture is indispensable part of human creativity. Among all other aspects of human activity, vernacular architecture is the best indicator of development stage of a certain civilization. It is the modus which shows us how the local communities knew how to use local materials, how to developed techniques and live in harmony with micro location- everything with the aim of satisfying their needs. In time when we almost managed to destroy our planet with contemporary, often untested and harmful materials, consuming large amounts of energy for heating and drying, finally we have focused on these exceptional examples that can show us how simple and smart we can use the knowledge and skills of our ancestors. Key words Vernacular architecture, Lukomir, sustainable construction, natural materials.

Keywords: Vernacular architecture, Lukomir, Sustainable construction, Natural materials

AN EFFECTIVE COMBINING CLASSIFIER APPROACH USING TREE ALGORITHMS FOR NETWORK INTRUSION DETECTION

Jasmin Kevrić

International Burch University
Bosnia and Herzegovina
jasmin.kevric@ibu.edu.ba

Samed Jukić

International Burch University
Bosnia and Herzegovina
samed.jukic@ibu.edu.ba

Abdulhamit Subasi

Effat University
Saudi Arabia

Abstract

In this paper, we developed a combining classifier model based on tree-based algorithms for network intrusion detection. The NSL-KDD dataset, a much improved version of the original KDDCUP'99 dataset, was used to evaluate the performance of our detection algorithm. The task of our detection algorithm was to classify whether the incoming network traffics are normal or an attack, based on 41 features describing every pattern of network traffic. The detection accuracy of 89.24 % was achieved using the combination of random tree and NBTree algorithms based on the sum rule scheme, outperforming the individual random tree algorithm. This result represents the highest result achieved so far using the complete NSL-KDD dataset. Therefore, combining classifier approach based on the sum rule scheme can yield better results than individual classifiers, giving us hope of better anomaly based intrusion detection systems in the future.

Keywords: Intrusion detection, Tree-based classifiers, NSL-KDD, Combining classifiers approach

COMPARISON OF SIGNAL DECOMPOSITION METHODS IN CLASSIFICATION OF EEG SIGNALS FOR MOTOR-IMAGERY BCI SYSTEM

Jasmin Kevrić

International Burch University
Bosnia and Herzegovina
jasmin.kevric@ibu.edu.ba

Abdulhamit Subasi

Effat University
Saudi Arabia

Abstract

In this study, three popular signal processing techniques (Empirical Mode Decomposition, Discrete Wavelet Transform, and Wavelet Packet Decomposition) were investigated for the decomposition of Electroencephalography (EEG) Signals in Brain Computer Interface (BCI) system for a classification task. Publicly available BCI competition III dataset IVa, a multichannel 2-class motor-imagery dataset, was used for this purpose. Multiscale Principal Component Analysis method was applied for the purpose of noise removal. In addition, different sets of features were formed to examine the effect of a particular group of features. The parameter selection process for signal decomposition methods was thoroughly explained as well. Our results show that the combination of Multiscale Principal Component Analysis de-noising and higher order statistics features extracted from wavelet packet decomposition sub-bands resulted in highest average classification accuracy of 92.8%. Our study is one among very few that provides a comprehensive comparison between signal decomposition methods in combination with higher order statistics in classification of BCI signals. In addition, we stressed the importance of higher frequency ranges in improving the classification task for EEG signals in Brain Computer Interface Systems. Obtained results indicate that the proposed model has the potential to obtain a reliable classification of motor imagery EEG signals, and can thus be used as a practical system for controlling a wheelchair. It can also further enhance the current rehabilitation therapies where appropriate feedback is delivered once the individual executes the correct movement. In that way, motor rehabilitation outcomes may improve over time.

Keywords: Empirical Mode Decomposition (EMD), Discrete Wavelet Transform (DWT), Wavelet Packet Decomposition (WPD), Motor Imagery (MI), Brain Computer Interface (BCI), Higher Order Statistics (HOS), BCI competition III dataset IVa

SURVEY OF LABORATORY-ACQUIRED INFECTIONS AROUND THE WORLD IN BIOSAFETY LEVEL 3 AND 4 LABORATORIES

Mirsada Hukic

International Burch University

Bosnia and Herzegovina

mirsada.hukic@ibu.edu.ba

Abstract

Laboratory-acquired infections due to a variety of bacteria, viruses, parasites, and fungi have been described over the last century, and laboratory workers are at risk of exposure to these infectious agents. However, reporting laboratory-associated infections has been largely voluntary, and there is no way to determine the real number of people involved or to know the precise risks for workers. In this study, an international survey based on volunteering was conducted in biosafety level 3 and 4 laboratories to determine the number of laboratory-acquired infections and the possible underlying causes of these contaminations. The analysis of the survey reveals that laboratory-acquired infections have been infrequent and even rare in recent years, and human errors represent a very high percentage of the cases. Today, most risks from biological hazards can be reduced through the use of appropriate procedures and techniques, containment devices and facilities, and the training of personnel.

Keywords: *Brucellosis, Personal Protective Equipment, Eoccidioidomycosis, Severe Acute Respiratory Syndrome, Tularemia*

Y-CHROMOSOME HAPLOGROUPS IN TURKISH POPULATION, COLL

Serkan Dogan

International Burch University
Bosnia and Herzegovina
serkan.dogan@ibu.edu.ba

Adna Ašić

International Burch University
Bosnia and Herzegovina
adna.asic@ibu.edu.ba

Larisa Bešić

International Burch University
Bosnia and Herzegovina
larisa.besic@ibu.edu.ba

Mirsada Hukic

International Burch University
Bosnia and Herzegovina
mirsada.hukic@ibu.edu.ba

Yusuf Turan

International Burch University
Bosnia and Herzegovina
yusuf.turan@ibu.edu.ba

Gulsen Doğan

Biljana Klimenta

Dragan Primorac

Abstract

Analysis of Y-chromosome haplogroup distribution is widely used when investigating geographical clustering of different populations, which is why it plays an important role in population genetics, human migration patterns and even in forensic investigations. Individual determination of these haplogroups is mostly based on the analysis of single nucleotide polymorphism (SNP) markers located in the non-recombining part of Y-chromosome (NRY). On the other hand, the number of forensic and anthropology studies investigating short tandem repeats on the Y-chromosome (Y-STRs) increases rapidly every year. During the last few years, these markers have been successfully used as haplogroup prediction methods, which is why they have been used in this study. Previously obtained Y-STR haplotypes (23 loci) from 100 unrelated Turkish males recently settled in Sarajevo were used for the determination of haplogroups via 'Whit Athey's Haplogroup Predictor' software. The Bayesian probability of 90 of the studied haplotypes is greater than 92.2% and ranges from 51.4% to 84.3% for the remaining 10 haplotypes. A distribution of 17 different haplogroups was found, with the Y-haplogroup J2a being most prevalent, having been found in 26% of all the samples, whereas R1b, G2a and R1a were less prevalent, covering a range of 10% to 15% of all the samples. Together, these four haplogroups account for 63% of all Y-chromosomes. Eleven haplogroups (E1b1b, G1, I1, I2a, I2b, J1, J2b, L, Q, R2, and T) range from 2% to 5%, while E1b1a and N are found in 1% of all samples. Obtained results indicate that a large majority of the Turkish paternal line belongs to West Asia, Europe Caucasus, Western Europe, Northeast Europe, Middle East, Russia, Anatolia, and Black Sea Y-chromosome lineages. As the distribution of Y-chromosome haplogroups is consistent with the previously published data for the Turkish population residing in Turkey, it was concluded that the analyzed population could also be recognized as a representative sample of the Turkish population residing in Turkey.

Keywords: Y-STRs, Y-SNPs, Y-chromosome, Haplotypes, Haplogroup predictor, Turkish population

ANTIBIOTIC RESISTANCE PROFILES AND GENETIC SIMILARITIES WITHIN A NEW GENERATION OF CARBAPENEM-RESISTANT ACINETOBACTER CALCOACETICUS-A. BAUMANNII COMPLEX RESISTOTYPES IN BOSNIA AND HERZEGOVINA

Mirsada Hukic

International Burch University
Bosnia and Herzegovina
mirsada.hukic@ibu.edu.ba

Aydin Çöl

Amela Dedeić-Ljubović

Irma Salimović-Bešić

Abstract

Acinetobacter calcoaceticus-A. baumannii complex (ACB complex) is a nosocomial pathogen. Due to its high ability to develop antibiotic resistance, it has become a problematic challenge in the modern healthcare system. The molecular and genetic mechanisms of gaining multidrug resistance in ACB complex are well known. This study focuses on providing an overview of the antibiotic resistance profiles, genetic similarities and resistotypes, and general characteristics of carbapenem-resistant ACB complex (CRACB) in Bosnia and Herzegovina (BiH). In light of the data collected in this study, together with the already known information concerning antibiotic resistance of ACB complex, we intend to further elucidate the antibiotic therapy for CRACB strain resistotypes in BiH.

Keywords: ACB complex; Bosnia; Antibiotic resistance; Carbapenem-resistant Acinetobacter; Genetic similarities; Resistotypes

EPIDEMIOLOGIC AND LABORATORY SURVEILLANCE OF THE MEASLES OUTBREAK IN THE FEDERATION OF BOSNIA AND HERZEGOVINA

Mirsada Hukic

International Burch University
Bosnia and Herzegovina
mirsada.hukic@ibu.edu.ba

Irma Salimović-Bešić

Amela Dedeić-Ljubović

Aydin Çöl

Abstract

A measles outbreak with two epidemic waves involving 4649 probable and laboratory-confirmed cases was recorded in six out of ten cantons of the Federation of Bosnia and Herzegovina between February 2014 and April 2015. The majority of the patients had never received measles vaccination (3115/4649, 67.00%), and the vaccination status of another 23% was unknown (1066/4649). A total of 281 blood samples were tested serologically. Virus detection was performed using 44 nasopharyngeal swabs. About 57% (161/281) of the laboratory-investigated sera were immunoglobulin M positive, and 95% (42/44) of the swabs were reverse transcriptase-PCR positive. Phylogenetic analysis of sequences obtained from 30 swab samples showed circulation of two variants of genotype D8, but no genotype D4 strains as detected in 2007. Similar involvement of all age groups indicates a problem with vaccine refusal resulting from antivaccination activities in addition to gaps in immunization coverage during the war and postwar period (1992-1998). Differences in ethnicity, vaccine coverage, compliance with review policies of vaccination records and potentially also travel habits may partially explain why only six of ten cantons were affected by the outbreak. The second epidemic wave may in part be due to large-scale migrations due to catastrophic floods in 2014. As a result of the epidemic, 6- to 12-month-old children may now be vaccinated against measles during outbreaks, and public health recommendations for interventions have been strengthened. Additional efforts are required to implement the measures throughout the cantons.

Keywords: Bosnia and Herzegovina, measles, Measles–Mumps–Rubella (MMR) vaccine; Outbreaks, Vaccine-preventable diseases, Vaccines and immunization

DETECTION OF PUUMALA VIRUS IN THE TISSUE OF INFECTED NATURALLY RODENT HOSTS IN THE AREA OF CENTRAL DINARIDES

Mirsada Hukic

International Burch University
Bosnia and Herzegovina
mirsada.hukic@ibu.edu.ba

Edina Dervović

University of Sarajevo
Bosnia and Herzegovina

Abstract

Hantaviruses are the causative agents of haemorrhagic fever with renal syndrome (HFRS) in Euroasia and of hantavirus cardiopulmonary syndrome (HCPS) in the North, Central and South America. HFRS is endemic in the Balkan Peninsula, where sporadic cases or outbreaks have been reported. Puumala virus (PUUV) is the causative agent of nephropathia epidemica (NE), a mild form of HFRS. PUUV is carried by the bank voles (Myodes glareolus). In this study, we investigated viral RNA from 76 tissues samples (lung n = 30, heart n = 6, liver n = 18 and kidney n = 22) of infected natural rodent hosts in the area of Central Dinarides caught in live traps. Puumala virus was extracted from 34,7% (16/46) rodents by nested reverse transcriptase polymerase chain reaction (RT-PCR) and real-time RT-PCR. Overall, 18 (21,4%) specimens of internal organs (kidney n = 8, liver n = 6, heart n = 2 and lung n = 2) were positive for PUUV. It was shown a high rodent infestation rate in a relatively low number of rodent and their organs, although mice were not caught during the time of high density population of host rodents.

Keywords: Puumala virus, Myodes glareolus, tissue, real-time RT-PCR, nested RT PCR

APPLICATION OF A PARALLEL SYNTHETIC STRATEGY IN THE DISCOVERY OF BIARYL ACYL SULFONAMIDES AS EFFICIENT AND SELECTIVE

Elma Ferić Bojić

International Burch University

Bosnia and Herzegovina

elma.feric@ibu.edu.ba

Abstract

The majority of potent and selective hNav1.7 inhibitors possess common pharmacophoric features that include a heteroaryl sulfonamide headgroup and a lipophilic aromatic tail group. Recently, reports of similar aromatic tail groups in combination with an acyl sulfonamide headgroup have emerged, with the acyl sulfonamide bestowing levels of selectivity over hNav1.5 comparable to the heteroaryl sulfonamide. Beginning with commercially available carboxylic acids that met selected pharmacophoric requirements in the lipophilic tail, a parallel synthetic approach was applied to rapidly generate the derived acyl sulfonamides. A biaryl acyl sulfonamide hit from this library was elaborated, optimizing for potency and selectivity with attention to physicochemical properties. The resulting novel leads are potent, ligand and lipophilic efficient, and selective over hNav1.5. Representative lead 36 demonstrates selectivity over other human NaV isoforms and good pharmacokinetics in rodents. The biaryl acyl sulfonamides reported herein may also offer ADME advantages over known heteroaryl sulfonamide inhibitors.

Keywords: *hNa V 1.7 inhibitors, selectivity, hNa V 1.5, acyl sulfonamide headgroup, carboxylic acids, heteroaryl sulfonamide, heteroaryl sulfonamide headgroup, biaryl acyl sulfonamide, biaryl acyl sulfonamides, lipophilic tailacyl sulfonamidetail groups, hNa V 1.5. Representativeacyl sulfonamide bestowing levels, pharmacophoric features, heteroaryl sulfonamide inhibitors, Na V isoforms, Biaryl Acyl Sulfonamides, tail group, Selective Na V 1.7 Inhibitors, ADME advantages, pharmacophoric requirements, physicochemical properties*

MOLECULAR MECHANISMS OF POSTTRAUMATIC STRESSDISORDER (PTSD) AS A BASIS FOR INDIVIDUALIZED AND PERSONALIZED THERAPY: RATIONALE, DESIGN AND METHODS OF THE SOUTH EASTERN EUROPE (SEE)-PTSD STUDY

Elma Ferić Bojić

International Burch University
Bosnia and Herzegovina
elma.feric@ibu.edu.ba

Damir Marjanović

International Burch University
Bosnia and Herzegovina
damir.marjanovic@ibu.edu.ba

Abstract

Posttraumatic Stress Disorder (PTSD) is a major health problem in South Eastern Europe (SEE). Available treatment options are not efficient enough and the course is often chronic. Little is known about molecular mediators and moderators of pathogenesis and therapy. Genetic and epigenetic variation may be one central molecular mechanism. We therefore established a consortium combining clinical expertise on PTSD from SEE countries Bosnia-Herzegovina (Sarajevo, Tuzla and Mostar), Kosovo (Prishtina) and Croatia (Zagreb) with genetic and epigenetic competence from Germany (Würzburg) in 2011 within the framework of the DAAD (Deutscher Akademischer Austauschdienst)-funded Stability Pact for South Eastern Europe. After obtaining ethical votes and performing rater trainings as well as training in DNA extraction from EDTA blood between 2011 and 2013, we recruited 747 individuals who had experienced war-related trauma in the SEE conflicts between 1991 and 1999. 236 participants had current PTSD, 161 lifetime PTSD and 350 did not have and never had PTSD. Demographic and clinical data are currently merged together with genetic and epigenetic data in a single database to allow for a comprehensive analysis of the role of genetic and epigenetic variation in the pathogenesis and therapy of PTSD. Analyses will be done to a great degree by PhD students from participating SEE centers who in addition to participation in the project had an opportunity to take part in spring and summer schools of the DFG (Deutsche Forschungsgemeinschaft) funded Research Training Group (RTG) 1253 and thus meet PhD students from Germany and other countries We are confident that our project will not only contribute to a better understanding of genetic and epigenetic mechanisms of PTSD as a basis for future individualized and personalized therapies, but also to the academic development of South Eastern Europe.

CHRONIC OBSTRUCTIVE PULMONARY DISEASE (COPD): CLINICAL SYMPTOMS, EMERGING TREATMENT STRATEGIES AND IMPACT ON QUALITY OF LIFE

Almir Badnjević

International Burch University
Bosnia and Herzegovina
almir.badnjevic@ibu.edu.ba

Lejla Gurbeta

International Burch University
Bosnia and Herzegovina
lejla.gurbeta@ibu.edu.ba

Elma Ferić Bojić

International Burch University
Bosnia and Herzegovina
elma.feric@ibu.edu.ba

Mario Cifrek

University of Zagreb
Croatia

Abstract

This chapter presents a system for classification of chronic obstructive pulmonary disease (COPD) based on fuzzy rules and a trained neural network. Fuzzy rules and neural network parameters are defined according to Global Initiative for Chronic Obstructive Lung Disease (GOLD) guidelines. For neural network training more than one thousand medical reports obtained from database of the company CareFusion were used. The system was subsequently validated in 285 patients by physicians at the Clinical Centre University of Sarajevo. Out of the investigated patients, 99.19% of the 248 with COPD and all of the 37 individuals with normal lung function were classified correctly. Obtained sensitivity (99.3%) and specificity (100%) in COPD were assessed, as well. Implemented neuro-fuzzy system for classification of COPD is based on a combination of spirometry and Impulse Oscillometry System (IOS) test results, which enables more accurate classification of the disease. Additionally, a complete patient's dynamic assessment can be obtained rather than a mere static assessment through the use of bronchodilatation and bronhospiratory provocation.

WORLDWIDE POPULATION CLUSTERING BASED ON 23 Y-STR LOCI.

Serkan Dogan

International Burch University
Bosnia and Herzegovina
serkan.dogan@ibu.edu.ba

Elma Ferić Bojić

International Burch University
Bosnia and Herzegovina
elma.feric@ibu.edu.ba

Damir Marjanović

International Burch University
Bosnia and Herzegovina
damir.marjanovic@ibu.edu.ba

Mirsada Hukić

International Burch University
Bosnia and Herzegovina
mirsada.hukic@ibu.edu.ba

Adna Ašić

International Burch University
Bosnia and Herzegovina
adna.asic@ibu.edu.ba

Yusuf Turan

International Burch University
Bosnia and Herzegovina
yusuf.turan@ibu.edu.ba

Monia Avdić

International Burch University
Bosnia and Herzegovina
monia.avdic@ibu.edu.ba

Sanida Buljubasić

International Burch University
Bosnia and Herzegovina

Abstract

Short tandem repeats (STRs) located on the Y-chromosome are a useful tool for the study of population structure and history. In this study, 23 Y-STR loci from 50 populations were compared (DYS19, DYS389I, DYS389II, DYS390, DYS391, DYS392, DYS393, DYS385a/b, DYS437, DYS438, DYS439, DYS448, DYS456, DYS458, DYS635, GATAH4, DYS481, DYS533, DYS549, DYS570, DYS576, and DYS643). The allele frequencies were calculated using Arlequin v3.5.1.2, while the haplotype data for these calculations were gathered from previously published articles. Furthermore, a worldwide phylogenetic tree was generated, and genetic distance values were calculated using POPTREE2 and MEGA 5.1 software. The results illustrate formation of several distinct clusters and sub clusters within them and indicate that this was mostly due to geographical proximity, which in turn resulted in neighboring populations becoming part of the same cluster. While the obtained results were in accordance with previously published research on autosomal STR analysis, the Y-STRs analyzed in the current study were more informative since they enabled regional clustering in addition to the continental one. Lastly, the use of a larger number of loci yielded clustering that is more specific than what has been calculated to date.

Keywords: Y-chromosome, Y-STRs, PowerPlex Y23, phylogenetic tree, population clustering

CLASSIFICATION AND COMPARISON OF UNCERTAINTY MODELLING METHODS IN POWER SYSTEMS

Jasna Hivziefendić

International Burch University
Bosnia and Herzegovina
jasna.hivzifendic@ibu.edu.ba

Jasmin Kevrić

International Burch University
Bosnia and Herzegovina
jasmin.kevric@ibu.edu.ba

Mirza Šarić

Abstract

Uncertainty is one of the most important factors which contributes to the complexity of the power system operation and management. This paper presents some of the most important uncertainty modelling techniques and compares their advantages and disadvantage. In particular, this paper focuses on identification, classification and comparison of uncertainty modelling approaches used in power systems, highlighting the Distributed Generation (DG) allocation problem. The main objective of this paper is to identify the sources of uncertainty in DG allocation problem, review the most important uncertainty modelling methods and propose the appropriate matching approach between the sources of uncertainty and modelling methods.

MANAGEMENT OF THE POWER DISTRIBUTION NETWORK RECONSTRUCTION PROCESS USING FUZZY LOGIC

Jasna Hivziefendić

International Burch University

Bosnia and Herzegovina

jasna.hivzifendic@ibu.edu.ba

Mirza Šarić

Abstract

This paper presents a fuzzy system for management of the power distribution network reconstruction process. The proposed system is based on Mamdani type fuzzy inference which is used to model reconstruction criteria. The system considers number of customers, rate of failure and age of distribution lines as input variables and provides output values used as criteria in a decision making process. The decision making process is based on the Bellman-Zadeh method in which decision making is performed by the intersection of fuzzy goals and constraints. In this paper, fuzzy logic is introduced as a system planning tool in order to account for weaknesses and imprecision of the traditional planning methods. The proposed model is presented as a logical decision making framework which can be used to evaluate and rank power distribution network reconstruction projects according to their ability to deliver long term benefits, both to the utility and customers.

OPTIMAL NETWORK RECONFIGURATION WITH DISTRIBUTED GENERATION USING NSGA II ALGORITHM

Jasna Hivziefendić

International Burch University
Bosnia and Herzegovina
jasna.hivzifendic@ibu.edu.ba

Amir Hadžimehmedović

University of Tuzla
Bosnia and Herzegovina

Majda Tesanović

University of Tuzla
Bosnia and Herzegovina

Abstract

This paper presents a method to solve electrical network reconfiguration problem in the presence of distributed generation (DG) with an objective of minimizing real power loss and energy not supplied function in distribution system. A method based on NSGA II multi-objective algorithm is used to simultaneously minimize two objective functions and to identify the optimal distribution network topology. The constraints of voltage and branch current carrying capacity are included in the evaluation of the objective function. The method has been tested on radial electrical distribution network with 213 nodes, 248 lines and 72 switches. Numerical results are presented to demonstrate the performance and effectiveness of the proposed methodology.

Keywords: Radial distribution network; Distributed generation; Genetic algorithms; NSGA II; Loss reduction

GENETIC HERITAGE OF THE BALTO-SLAVIC SPEAKING POPULATIONS: A SYNTHESIS OF AUTOSOMAL, MITOCHONDRIAL AND Y-CHROMOSOMAL DATA

Damir Marjanović

International Burch University
Bosnia and Herzegovina
damir.marjanovic@ibu.edu.ba

Alena Kushniarevich

Estonian Biocentre
Estonia

Abstract

The Slavic branch of the Balto-Slavic sub-family of Indo-European languages underwent rapid divergence as a result of the spatial expansion of its speakers from Central-East Europe, in early medieval times. This expansion-mainly to East Europe and the northern Balkans-resulted in the incorporation of genetic components from numerous autochthonous populations into the Slavic gene pools. Here, we characterize genetic variation in all extant ethnic groups speaking Balto-Slavic languages by analyzing mitochondrial DNA ($n = 6,876$), Y-chromosomes ($n = 6,079$) and genome-wide SNP profiles ($n = 296$), within the context of other European populations. We also reassess the phylogeny of Slavic languages within the Balto-Slavic branch of Indo-European. We find that genetic distances among Balto-Slavic populations, based on autosomal and Y-chromosomal loci, show a high correlation (0.9) both with each other and with geography, but a slightly lower correlation (0.7) with mitochondrial DNA and linguistic affiliation. The data suggest that genetic diversity of the present-day Slavs was predominantly shaped in situ, and we detect two different substrata: 'central-east European' for West and East Slavs, and 'south-east European' for South Slavs. A pattern of distribution of segments identical by descent between groups of East-West and South Slavs suggests shared ancestry or a modest gene flow between those two groups, which might derive from the historic spread of Slavic people.

OVERVIEW OF EUROPEAN POPULATION CLUSTERING BASED ON 23 Y-STR LOCI

Damir Marjanović

International Burch University
Bosnia and Herzegovina
damir.marjanovic@ibu.edu.ba

Serkan Doğan

International Burch University
Bosnia and Herzegovina
serkan.dogan@ibu.edu.ba

Elma Ferić Bojić

International Burch University
Bosnia and Herzegovina
elma.feric@ibu.edu.ba

Mirsada Hukić

International Burch University
Bosnia and Herzegovina
mirsada.hukic@ibu.edu.ba

Adna Ašić

International Burch University
Bosnia and Herzegovina
adna.asic@ibu.edu.ba

Yusuf Turan

International Burch University
Bosnia and Herzegovina
yusuf.turan@ibu.edu.ba

Larisa Bešić

International Burch University
Bosnia and Herzegovina
larisa.besic@ibu.edu.ba

Monia Avdić

International Burch University
Bosnia and Herzegovina
monia.avdic@ibu.edu.ba

Sanida Buljubasić

International Burch University
Bosnia and Herzegovina

Abstract

Short tandem repeats (STRs) located on the Y-chromosome are a useful tool for various scientific fields, such as forensic investigation, but also for the investigation of population structure and molecular history. In this study, population data based on 23 Y-STR loci (DYS19, DYS389I, DYS389II, DYS390, DYS391, DYS392, DYS393, DYS385a/b, DYS437, DYS438, DYS439, DYS448, DYS456, DYS458, DYS635, GATAH4, DYS481, DYS533, DYS549, DYS570, DYS576, and DYS643) from 23 European human populations were compared. All haplotype data for this research were gathered from previously published articles. Arlequin v3.5.1.2, POPTREE2, and MEGA 5.1 software packages were used for the calculation of allelic frequencies and genetic distance, and the construction of the European, as well as worldwide phylogenetic trees. Obtained results indicate a formation of several distinct sub-clusters within European population cluster. Observed sub-clusters were mostly recognized within geographically closer populations, meaning that neighboring populations were a part of the same sub-cluster in most of the cases. Compared with the previously published results obtained using autosomal STR markers, a significant level of concordance was detected. However, it seems that Y-STRs analyzed in this study are more informative since they enabled regional clustering in addition to continental clustering. Also, the use of a larger number of loci yielded clustering that is more specific than what has been calculated to date. Finally, it can be concluded that this study has shown that the application of a larger number of loci enables the more detailed insight into the relationships between European populations, compared to what has been published before. Key words: Y-chromosome, Y-STRs, PowerPlex Y23, European populations, population clustering, phylogenetic tree, population genetics.

MOLECULAR MECHANISMS OF POSTTRAUMATIC STRESS DISORDER (PTSD) AS A BASIS FOR INDIVIDUALIZED AND PERSONALIZED THERAPY: RATIONALE, DESIGN, AND METHODS OF THE SOUTH EASTERN EUROPE (SEE)-PTSD STUDY

Damir Marjanović

International Burch University
Bosnia and Herzegovina
damir.marjanovic@ibu.edu.ba

Alma Džubur-Kulenović

Clinical Center of the University of Sarajevo
Bosnia and Herzegovina

Abstract

Posttraumatic Stress Disorder (PTSD) is a major health problem in South Eastern Europe (SEE). Available treatment options are not efficient enough and the course is often chronic. Little is known about molecular mediators and moderators of pathogenesis and therapy. Genetic and epigenetic variation may be one central molecular mechanism. We therefore established a consortium combining clinical expertise on PTSD from SEE countries Bosnia-Herzegovina (Sarajevo, Tuzla and Mostar), Kosovo (Prishtina) and Croatia (Zagreb) with genetic and epigenetic competence from Germany (Würzburg) in 2011 within the framework of the DAAD (Deutscher Akademischer Austauschdienst)-funded Stability Pact for South Eastern Europe. After obtaining ethical votes and performing rater trainings as well as training in DNA extraction from EDTA blood between 2011 and 2013, we recruited 747 individuals who had experienced war-related trauma in the SEE conflicts between 1991 and 1999. 236 participants had current PTSD, 161 lifetime PTSD and 350 did not have and never had PTSD. Demographic and clinical data are currently merged together with genetic and epigenetic data in a single database to allow for a comprehensive analysis of the role of genetic and epigenetic variation in the pathogenesis and therapy of PTSD. Analyses will be done to a great degree by PhD students from participating SEE centers who in addition to participation in the project had an opportunity to take part in spring and summer schools of the DFG (Deutsche Forschungsgemeinschaft) funded Research Training Group (RTG) 1253 and thus meet PhD students from Germany and other countries We are confident that our project will not only contribute to a better understanding of genetic and epigenetic mechanisms of PTSD as a basis for future

individualized and personalized therapies, but also to the academic development of South Eastern Europe.

Keywords: *PTSD, South Eastern Europe, Genetics, Epigenetics, Molecular mechanisms., Individualized therapy, Personalized therapy*

PREDICTION OF THE Y-CHROMOSOME HAPLOGROUPS WITHIN A RECENTLY SETTLED TURKISH POPULATION IN SARAJEVO, BOSNIA AND HERZEGOVINA

Damir Marjanović

International Burch University
Bosnia and Herzegovina
damir.marjanovic@ibu.edu.ba

Serkan Doğan

International Burch University
Bosnia and Herzegovina
serkan.dogan@ibu.edu.ba

Mirsada Hukić

International Burch University
Bosnia and Herzegovina
mirsada.hukic@ibu.edu.ba

Adna Ašić

International Burch University
Bosnia and Herzegovina
adna.asic@ibu.edu.ba

Yusuf Turan

International Burch University
Bosnia and Herzegovina
yusuf.turan@ibu.edu.ba

Larisa Bešić

International Burch University
Bosnia and Herzegovina
larisa.besic@ibu.edu.ba

Gulsen Doğan

Biljana Klimenta

Abstract

Analysis of Y-chromosome haplogroup distribution is widely used when investigating geographical clustering of different populations, which is why it plays an important role in population genetics, human migration patterns and even in forensic investigations. Individual determination of these haplogroups is mostly based on the analysis of single nucleotide polymorphism (SNP) markers located in the non-recombining part of Y-chromosome (NRY). On the other hand, the number of forensic and anthropology studies investigating short tandem repeats on the Y-chromosome (Y-STRs) increases rapidly every year. During the last few years, these markers have been successfully used as haplogroup prediction methods, which is why they have been used in this study. Previously obtained Y-STR haplotypes (23 loci) from 100 unrelated Turkish males recently settled in Sarajevo were used for the determination of haplogroups via 'Whit Athey's Haplogroup Predictor' software. The Bayesian probability of 90 of the studied haplotypes is greater than 92.2% and ranges from 51.4% to 84.3% for the remaining 10 haplotypes. A distribution of 17 different haplogroups was found, with the Y-haplogroup J2a being most prevalent, having been found in 26% of all the samples, whereas R1b, G2a and R1a were less prevalent, covering a range of 10% to 15% of all the samples. Together, these four haplogroups account for 63% of all Y-chromosomes. Eleven haplogroups (E1b1b, G1, I1, I2a, I2b, J1, J2b, L, Q, R2, and T) range from 2% to 5%, while E1b1a and N are found in 1% of all samples. Obtained results indicate that a large majority of the Turkish paternal line belongs to West Asia, Europe Caucasus, Western Europe, Northeast Europe, Middle East, Russia, Anatolia, and Black Sea Y-chromosome lineages. As the distribution of Y-chromosome haplogroups is consistent with the previously published data for the Turkish population residing in Turkey, it was concluded that the analyzed population could also be recognized as a representative sample of the Turkish population residing in Turkey.

GENOMIC ANALYSES INFORM ON MIGRATION EVENTS DURING THE PEOPLING OF EURASIA

Damir Marjanović

International Burch University
Bosnia and Herzegovina
damir.marjanovic@ibu.edu.ba

Luca Pagani

Abstract

High-coverage whole-genome sequence studies have so far focused on a limited number of geographically restricted populations, or been targeted at specific diseases, such as cancer. Nevertheless, the availability of high-resolution genomic data has led to the development of new methodologies for inferring population history and refuelled the debate on the mutation rate in humans. Here we present the Estonian Biocentre Human Genome Diversity Panel (EGDP), a dataset of 483 high-coverage human genomes from 148 populations worldwide, including 379 new genomes from 125 populations, which we group into diversity and selection sets. We analyse this dataset to refine estimates of continent-wide patterns of heterozygosity, long- and short-distance gene flow, archaic admixture, and changes in effective population size through time as well as for signals of positive or balancing selection. We find a genetic signature in present-day Papuans that suggests that at least 2% of their genome originates from an early and largely extinct expansion of anatomically modern humans (AMHs) out of Africa. Together with evidence from the western Asian fossil record, and admixture between AMHs and Neanderthals predating the main Eurasian expansion, our results contribute to the mounting evidence for the presence of AMHs out of Africa earlier than 75,000 years ago.

DIAGNOSTIC OF ASTHMA USING FUZZY RULES IMPLEMENTED IN ACCORDANCE WITH INTERNATIONAL GUIDELINES AND PHYSICIANS EXPERIENCE

Almir Badnjević

International Burch University
Bosnia and Herzegovina
almir.badnjevic@ibu.edu.ba

Lejla Gurbeta

International Burch University
Bosnia and Herzegovina
lejla.gurbeta@ibu.edu.ba

Damir Marjanović

International Burch University
Bosnia and Herzegovina
damir.marjanovic@ibu.edu.ba

Mario Cifrek

University of Zagreb
Croatia

Abstract

This paper presents a system for classification of asthma based on fuzzy rules. Fuzzy rules are defined according to Global Initiative for Asthma (GINA) guidelines, as well as through consultations with long-term experience of pulmonologists. Our fuzzy system for classification of asthma is based on a combination of spirometry (SPIR) and Impulse Oscillometry System (IOS) test results, which are inputs to fuzzy system. Additionally, the use of bronchodilatation and bronhoprovocation enabled a complete patient's dynamic assessment rather than a simple static assessment. The system was retroactively tested with 1250 Medical Reports established by pulmonologists, out of which 728 were diagnosed with asthma and 522 were healthy subjects. Sensitivity and specificity were assessed, on this dataset, which were 91.89% and 95.01%, respectively.

Keywords: Diseases, fuzzy logic, lungs, software, guidelines, expert systems

CLASSIFICATION OF ASTHMA USING ARTIFICIAL NEURAL NETWORK

Almir Badnjević

International Burch University
Bosnia and Herzegovina
almir.badnjevic@ibu.edu.ba

Lejla Gurbeta

International Burch University
Bosnia and Herzegovina
lejla.gurbeta@ibu.edu.ba

Damir Marjanović

International Burch University
Bosnia and Herzegovina
damir.marjanovic@ibu.edu.ba

Mario Cifrek

University of Zagreb
Croatia

Abstract

This paper presents a system for classification of asthma based on artificial neural network. A total of 1800 Medical Reports were used for neural network training. The system was subsequently tested through the use of 1250 Medical Reports established by physicians from hospital Sarajevo. Out of the aforementioned Medical Reports, 728 were diagnoses of asthma, while 522 were healthy subjects. Out of the 728 asthmatics, 97.11% were correctly classified, and the healthy subjects were classified with an accuracy of 98.85%. Sensitivity and specificity were assessed, as well, which were 97.11% and 98.85%, respectively. Our system for classification of asthma is based on a combination of spirometry (SPIR) and Impulse Oscillometry System (IOS) test results, whose measurement results were inputs to artificial neural network. Artificial neural network is implemented to obtain both static and dynamic assessment of the patient's respiratory system.

TEN-YEAR TRENDS IN PREVALENCE OF DOWN SYNDROME IN A DEVELOPING COUNTRY: IMPACT OF THE MATERNAL AGE AND PRENATAL SCREENING

Amina Kurtović-Kozarić

International Burch University
Bosnia and Herzegovina
amina.kurtovic@ibu.edu.ba

Abstract

Objective: This study examines trends in total and live birth prevalence of trisomy 21 (T21) with regard to increasing maternal age and the introduction of prenatal diagnosis in Bosnia and Herzegovina. Method: The prenatal detection was introduced in January 2008 in 3 hospitals and assessed until December 31, 2015. In this study, 99 fetuses and 330 babies were diagnosed with T21 in the studied period. Results: On average, each year 33 T21 individuals were born and 13 T21 fetuses were diagnosed prenatally. The calculated incidence for the live born T21 individuals in Bosnia is 1:999. The live-birth prevalence of T21 was 9.6 per 10,000 births and the total prevalence of T21 was 19.1. The total T21 prevalence increases exponentially with the advanced maternal age. Prenatal T21 prevalence is 1.29 per 10,000 births for mothers <35, but increases exponentially with increasing age (32 for >40 years). The most common indications for invasive prenatal testing were ultrasound screening combined with biochemical serum analysis followed by the advanced maternal age. Conclusion: The prevalence of liveborn Down syndrome children remained constant. Despite the fact that increasing maternal age in the last decade contributed to the rise in the total T21 prevalence, the effect of the introduction of prenatal diagnosis on the live-birth T21 prevalence of T21 was minimal, leading to the conclusion that the prenatal screening has to be improved in developing countries.

Keywords: Bosnia and Herzegovina, maternal age, prenatal diagnosis, trends, trisomy 21

COMPARISON OF MLL FUSION GENES EXPRESSION AMONG THE CYTOGENETICS ABNORMALITIES OF ACUTE MYELOID LEUKEMIA AND THEIR CLINICAL EFFECTS

Senol Dogan

International Burch University
Bosnia and Herzegovina
senol.dogan@ibu.edu.ba

Amina Kurtović-Kozarić

International Burch University
Bosnia and Herzegovina
amina.kurtovic@ibu.edu.ba

Albenita Hajrović

Muhamed Lišić

Ercan Gokgoz

Abstract

Mixed-lineage leukemia (MLL) is a subtype of acute myeloid leukemia with more aggressive prognosis than other subtypes. Translocations of MLL gene with other partner genes, forming the MLL-fusion proteins (MLL-FPs), are the main characteristics of MLL leukemia. Many studies have demonstrated that MLL-FPs such as: MLL-AF4, MLL-AF6, MLL-AF9, MLL-AF10, MLL-ENL, MLL-ELL, MLL-EPS15, as well as partial tandem duplication are the most common abnormalities that play significant role in MLL-rearranged leukemia. Gene expression profiles from 197 patients and 180 clinical data were downloaded from TCGA database. R statistical program has classified clinical and genomic data simultaneously according to cytogenetic abnormalities. As a result of this analysis, the most frequent 47 MLLFPs genes expression have been detected and compared with other cytogenetic abnormalities such as t(4;11), t(9;11), t(8;21), t(15;17), complex, inversion 16, trisomy 8 and cytogenetically normal AML. 35 out of 46 MLL-FPs genes presented with abnormal gene expression profile. This study showed that MLL-FPs are not just active and related with MLL, but also with other subtypes of AML.

Keywords: AML, MLL, data mining, cytogenetic abnormalities, fusion protein, gene expression

THE DETECTION OF EXTREMELY HIGH AND LOW EXPRESSED GENES BY EGEF ALGORITHM IN INVASIVE BREAST CANCER

Senol Dogan

International Burch University
Bosnia and Herzegovina
senol.dogan@ibu.edu.ba

Amina Kurtović-Kozarić

International Burch University
Bosnia and Herzegovina
amina.kurtovic@ibu.edu.ba

Gunay Karli

International Burch University
Bosnia and Herzegovina
gunay.karli@ibu.edu.ba

Abstract

Invasive breast cancer is a heterogeneous disease. The analysis of one or a group of specific gene expression profiles may not be enough to understand molecular activities in cancer cells. Therefore, a method which gives us the opportunity to compare similar up and down regulated gene expression profiles, is needed. The main purpose of our work is to sort the extreme high and low expressed genes and extract, compare and cluster them. Expression profiles of 598 samples of invasive breast cancer and 48 samples of normal tissue have been analysed to create a new algorithm called Extreme Gene Expression Family (EGEF). The EGEF algorithm sorted, grouped and compared the highest and the lowest expressed genes ($n = 100$). According to the hierarchical clustering result, dense and light memberships of gene families are detected. The resulting analysis allows us to predict which genes would show similar expression signatures in invasive breast cancer and to us to recognize specific biological activities and processes. EGEF algorithm can be used to detect expression signatures in other cancers and biological processes.

Keywords: TCGA, invasive breast cancer, EGEF algorithm, expression pattern

ANALYSIS OF GAUCHER DISEASE RESPONSIBLE GENES IN COLORECTAL ADENOCARCINOMA

Senol Dogan

International Burch University
Bosnia and Herzegovina
senol.dogan@ibu.edu.ba

Amina Kurtović-Kozarić

International Burch University
Bosnia and Herzegovina
amina.kurtovic@ibu.edu.ba

Yusuf Turan

International Burch University
Bosnia and Herzegovina
yusuf.turan@ibu.edu.ba

Mesut Karatas

International Burch University
Bosnia and Herzegovina

Abstract

Gaucher disease is a hereditary genetic abnormality which defects the pathway of sphingolipid catabolism. The mutation of GBA gene which encodes lysosomal β -glucosidase enzyme is the main characteristics of the disease also is observed in different cancer types. To find the relation between the disease and colon adenocarcinoma, the responsible gene expression of Gaucher disease was analyzed. The gene expression of colon adenocarcinoma was compared between death and alive patients and analyzed statistically to profile the differences between Gaucher disease genes expression changes. GBA, GBA2, GBA3, SCARB2 and PSAP have the maximum genetic alteration which is observed in colon adenocarcinoma.

Keywords: *Gaucher disease, colon adenocarcinoma, glucosphingolipid, genetic mutations, macrophages, immune dysregulation*

DIAGNOSTICS OF COMMON MICRODELETION SYNDROMES USING FLUORESCENCE IN SITU HYBRIDIZATION: SINGLE CENTER EXPERIENCE IN A DEVELOPING COUNTRY

Amina Kurtović-Kozarić

International Burch University

Bosnia and Herzegovina

amina.kurtovic@ibu.edu.ba

Abstract

Microdeletion syndromes are caused by chromosomal deletions of less than 5 megabases which can be detected by fluorescence in situ hybridization (FISH). We evaluated the most commonly detected microdeletions for the period from June 01, 2008 to June 01, 2015 in the Federation of Bosnia and Herzegovina, including DiGeorge, Prader-Willi/Angelman, Wolf-Hirschhorn, and Williams syndromes. We report 4 patients with DiGeorge syndromes, 4 patients with Prader-Willi/Angelman, 4 patients with Wolf-Hirschhorn syndrome, and 3 patients with Williams syndrome in the analyzed 7 year period. Based on the positive FISH results for each syndrome, the incidence was calculated for the Federation of Bosnia and Herzegovina. These are the first reported frequencies of the microdeletion syndromes in the Federation of Bosnia and Herzegovina.

Keywords: Microdeletion syndrome, DiGeorge, Williams, Prader-Willi, Angelman, Wolf-Hirschhorn, fluorescent in situ hybridization

THE REALITY OF CANCER TREATMENT IN A DEVELOPING COUNTRY: THE EFFECTS OF DELAYED TKI TREATMENT ON SURVIVAL, CYTOGENETIC AND MOLECULAR RESPONSES IN CHRONIC MYELOID LEUKAEMIA PATIENTS

Amina Kurtović-Kozarić

International Burch University

Bosnia and Herzegovina

amina.kurtovic@ibu.edu.ba

Abstract

Cancer patients in developing and low-income countries have limited access to target therapies. For example, tyrosine kinase inhibitor (TKI) therapy for chronic myeloid leukaemia patients (CML) is often delayed. In Bosnia, 16% of patients received immediate TKI treatment (<3 months of diagnosis), while 66% of patients received therapy after a median 14-month wait period. To assess the effect of delayed treatment on outcome, three patient groups were studied according to the time they received TKI treatment (0-5 months, 6-12 months and >13 months delay). The primary endpoints were complete cytogenetic (CCyR) and major molecular response (MMR) at 12 months. At 12 months of therapy, CCyR and MMR rates on imatinib decreased significantly: CCyR was achieved in 67% of patients in the immediate imatinib treatment group, 18% of patients in 6-12 months group and 15% of patients in >13 months wait group. MMR rates at 12 months occurred in 10% of patients with immediate treatment, 6% of those in 6-12 months group and 0% of patients in >13 months wait group. However, CCyR and MMR rates in patients on nilotinib were not associated with duration of treatment delay. Our data suggests that the deleterious effect of a prolonged TKI therapy delay may be ameliorated by the more active TKI nilotinib.

Keywords: chronic myeloid leukaemia; cytogenetic response; molecular response; treatment delay

APPLICATION OF ISOTHERMAL TITRATION CALORIMETRY IN EVALUATION OF PROTEIN–NANOPARTICLE INTERACTIONS

Enisa Omanović-Miklićanin

International Burch University

Bosnia and Herzegovina

e.omanovic.miklicanin@ibu.edu.ba

Iain Manfield

Terry Wilkins

Abstract

Nanoparticles (NPs) offer a number of advantages over small organic molecules for controlling protein behaviour inside the cell. Protein binding to the surface of NPs depends on their surface characteristics, composition and method of preparation (Mandal et al. in J Hazard Mater 248–249:238–245, 2013). It is important to understand the binding affinities, stoichiometries and thermodynamical parameters of NP–protein interactions in order to see which interaction will have toxic and hazardous consequences and thus to prevent it. On the other side, because proteins are on the brink of stability, they may experience interactions with some types of NPs that are strong enough to cause denaturation or significantly change their conformations with concomitant loss of their biological function. Structural changes in the protein may cause exposure of new antigenic sites, “cryptic” peptide epitopes, potentially triggering an immune response which can promote autoimmune disease (Treuel et al. in ACS Nano 8(1):503–513, 2014). Mechanistic details of protein structural changes at NP surface have still remained elusive. Understanding the formation and persistence of the protein corona is critical issue; however, there are no many analytical methods which could provide detailed information about the NP–protein interaction characteristics and about protein structural changes caused by interactions with nanoparticles. The article reviews recent studies in NP–protein interactions research and application of isothermal titration calorimetry (ITC) in this research. The study of protein structural changes upon adsorption on nanoparticle surface and application of ITC in these studies is emphasized. The data illustrate that ITC is a versatile tool for evaluation of interactions between NPs and proteins. When coupled with other analytical methods, it is important analytical tool for monitoring conformational changes in proteins.

Keywords: Isothermal Titration Calorimetry, Nanoparticles, Proteins, Interactions, Gold nanoparticles, Protein–Nanoparticle Interaction.

PHENOLIC COMPOSITION OF DIFFERENT FRUIT TISSUES OF FIVE AUTOCHTHONOUS APPLE CULTIVARS IN BOSNIA AND HERZEGOVINA

Enisa Omanović-Miklićanin

International Burch University

Bosnia and Herzegovina

e.omanovic.miklicanin@ibu.edu.ba

Maida Đapo

University Džemal Bijedić Mostar

Bosnia and Herzegovina

Esma Velagić-Habul

Fuad Gaši

University of Sarajevo

Bosnia and Herzegovina

Jasmin Grahić

University of Sarajevo

Bosnia and Herzegovina

Abstract

Apple consumption is related to the prevention of chronic diseases and improved health due to the presence of phytochemicals, especially phenolic compounds. The compositional differences among apple cultivars and fruit tissues can be very significant in respect to the concentration of polyphenolic compounds. In this work, the phenolic composition of the flesh and peel of five autochthonous apple cultivars: 'Bobovec', 'Đulabija', 'Habikuša crvena', 'Samoniklica', and 'Sarija', and two commercial cultivars: 'Idared' and 'Golden Delicious' was investigated using high-performance liquid chromatography (HPLC) coupled with a photodiode array (PDA) detector. All apples originated from the orchard "Srebrenik" (North East Bosnia) and were harvested in 2013. The studied apples were found to contain 14 individual phenolic compound, which belong to the four dominant polyphenolic classes. The eight polyphenolic compounds from peel and flesh of the autochthonous cultivars of apples were quantified and found to contain epicatechin and procyanidin B2 as the most abundant phenolic compounds in the peel, and chlorogenic acid as the most abundant phenolic compound in the flesh. In a comparison of fruit tissue within each cultivar, apple peel had a significantly higher phenolic content

than a flesh. In general, it should be stated that according to the amount of polyphenols some autochthonous cultivars do not lag behind the current commercial cultivars.

Keywords: *autochthonous, Apple Cultivars, Phenolic Compounds*

PURIFICATION AND CHARACTERIZATION OF β -GLUCOSIDASE FROM AGARICUS BISPORUS (WHITE BUTTON MUSHROOM)

Enisa Omanović-Miklićanin

International Burch University
Bosnia and Herzegovina
e.omanovic.miklicanin@ibu.edu.ba

Larisa Bešić

International Burch University
Bosnia and Herzegovina
larisa.besic@ibu.edu.ba

Adna Ašić

International Burch University
Bosnia and Herzegovina
adna.asic@ibu.edu.ba

Yusuf Turan

International Burch University
Bosnia and Herzegovina
yusuf.turan@ibu.edu.ba

Imer Muhović

Abstract

β -Glucosidase (β -D-glucoside glucohydrolase, EC 3.2.1.21) is a catalytic enzyme present in both prokaryotes and eukaryotes that selectively catalyzes either the linkage between two glycone residues or between glycone and aryl or alkyl aglycone residue. Growing edible mushrooms in the soil with increased cellulose content can lead to the production of glucose, which is a process dependent on β -glucosidase. In this study, β -glucosidase was isolated from Agaricus bisporus (white button mushroom) using ammonium sulfate precipitation and hydrophobic interaction chromatography, giving 10.12-fold purification. Biochemical properties of the enzyme were investigated and complete characterization was performed. The enzyme is a dimer with two subunits of approximately 46 and 62 kDa. Optimum pH for the enzyme is 4.0, while the optimum temperature is 55 °C. The enzyme was found to be exceptionally thermostable. The most suitable commercial substrate for this enzyme is p-NPGlu with

*K_m and V_{max} values of 1.751 mM and 833 U/mg, respectively. Enzyme was inhibited in a competitive manner by both glucose and δ -gluconolactone with IC₅₀ values of 19.185 and 0.39 mM, respectively and K_i values of 9.402 mM and 7.2 μ M, respectively. Heavy metal ions that were found to inhibit β -glucosidase activity are I(-), Zn(2+), Fe(3+), Ag(+), and Cu(2+). This is the first study giving complete biochemical characterization of *A. bisporus* β -glucosidase.*

Keywords: *Agaricus bisporus; Characterization; Hydrophobic interaction chromatography; Purification; White button mushroom; β -Glucosidase*

PREDICTION OF THE Y-CHROMOSOME HAPLOGROUPS WITHIN A RECENTLY SETTLED TURKISH POPULATION IN SARAJEVO, BOSNIA AND HERZEGOVINA

Enisa Omanović-Miklićanin

International Burch University
Bosnia and Herzegovina
e.omanovic.miklicanin@ibu.edu.ba

Larisa Bešić

International Burch University
Bosnia and Herzegovina
larisa.besic@ibu.edu.ba

Adna Ašić

International Burch University
Bosnia and Herzegovina
adna.asic@ibu.edu.ba

Abstract

Analysis of Y-chromosome haplogroup distribution is widely used when investigating geographical clustering of different populations, which is why it plays an important role in population genetics, human migration patterns and even in forensic investigations. Individual determination of these haplogroups is mostly based on the analysis of single nucleotide polymorphism (SNP) markers located in the non-recombining part of Y-chromosome (NRY). On the other hand, the number of forensic and anthropology studies investigating short tandem repeats on the Y-chromosome (Y-STRs) increases rapidly every year. During the last few years, these markers have been successfully used as haplogroup prediction methods, which is why they have been used in this study. Previously obtained Y-STR haplotypes (23 loci) from 100 unrelated Turkish males recently settled in Sarajevo were used for the determination of haplogroups via 'Whit Athey's Haplogroup Predictor' software. The Bayesian probability of 90 of the studied haplotypes is greater than 92.2% and ranges from 51.4% to 84.3% for the remaining 10 haplotypes. A distribution of 17 different haplogroups was found, with the Y-haplogroup J2a being most prevalent, having been found in 26% of all the samples, whereas R1b, G2a and R1a were less prevalent, covering a range of 10% to 15% of all the samples. Together, these four haplogroups account for 63% of all Y-chromosomes. Eleven haplogroups (E1b1b, G1, I1, I2a, I2b, J1, J2b,

L, Q, R2, and T) range from 2% to 5%, while E1b1a and N are found in 1% of all samples. Obtained results indicate that a large majority of the Turkish paternal line belongs to West Asia, Europe Caucasus, Western Europe, Northeast Europe, Middle East, Russia, Anatolia, and Black Sea Y-chromosome lineages. As the distribution of Y-chromosome haplogroups is consistent with the previously published data for the Turkish population residing in Turkey, it was concluded that the analyzed population could also be recognized as a representative sample of the Turkish population residing in Turkey.

Keywords: Y-Chromosome, haplogroup predictor, clustering, Y-STRs, Turkish population

CLASSIFICATION OF CHRONIC OBSTRUCTIVE PULMONARY DISEASE BASED ON NEURO-FUZZY SOFTWARE IN: CHRONIC OBSTRUCTIVE PULMONARY DISEASE (COPD): CLINICAL SYMPTOMS, EMERGING TREATMENT STRATEGIES AND IMPACT ON QUALITY OF LIFE

Almir Badnjević

International Burch University
Bosnia and Herzegovina
almir.badnjevic@ibu.edu.ba

Lejla Gurbeta

International Burch University
Bosnia and Herzegovina
gurbeta.lejla@ibu.edu.ba

Elma Ferić Bojić

International Burch University
Bosnia and Herzegovina
elma.feric@ibu.edu.ba

Mario Cifrek

University of Zagreb
Croatia

Abstract

This chapter presents a system for classification of chronic obstructive pulmonary disease (COPD) based on fuzzy rules and a trained neural network. Fuzzy rules and neural network parameters are defined according to Global Initiative for Chronic Obstructive Lung Disease (GOLD) guidelines. For neural network training more than one thousand medical reports obtained from database of the company CareFusion were used. The system was subsequently validated in 285 patients by physicians at the Clinical Centre University of Sarajevo. Out of the investigated patients, 99.19% of the 248 with COPD and all of the 37 individuals with normal lung function were classified correctly. Obtained sensitivity (99.3%) and specificity (100%) in COPD were assessed, as well. Implemented neuro-fuzzy system for classification of COPD is based on a combination of spirometry and Impulse Oscillometry System (IOS) test results, which enables more accurate classification of the disease. Additionally, a complete

patient's dynamic assessment can be obtained rather than a mere static assessment through the use of bronchodilatation and bronhoprovoction.

TESTING OF MECHANICAL VENTILATORS AND INFANT INCUBATORS IN HEALTHCARE INSTITUTIONS

Almir Badnjević

International Burch University
Bosnia and Herzegovina
almir.badnjevic@ibu.edu.ba

Lejla Gurbeta

International Burch University
Bosnia and Herzegovina
gurbeta.lejla@ibu.edu.ba

Abstract

The medical device industry has grown rapidly and incessantly over the past century. The sophistication and complexity of the designed instrumentation is nowadays rising and, with it, has also increased the need to develop some better, more effective and efficient maintenance processes, as part of the safety and performance requirements. This paper presents the results of performance tests conducted on 50 mechanical ventilators and 50 infant incubators used in various public healthcare institutions. Testing was conducted in accordance to safety and performance requirements stated in relevant international standards, directives and legal metrology policies. Testing of output parameters for mechanical ventilators was performed in 4 measuring points while testing of output parameters for infant incubators was performed in 7 measuring points for each infant incubator. As performance criteria, relative error of output parameters for mechanical ventilators and absolute error of output parameters for infant incubators was calculated. The ranges of permissible error, for both groups of devices, are regulated by the Rules on Metrological and Technical Requirements published in the Official Gazette of Bosnia and Herzegovina No. 75/14, which are defined based on international recommendations, standards and guidelines. All ventilators and incubators were tested by etalons calibrated in an ISO 17025 accredited laboratory, which provides compliance to international standards for all measured parameters. The results show that 30% of the tested medical devices are not operating properly and should be serviced, recalibrated and/or removed from daily application.

Keywords: Health Technology Management, Clinical Engineering, Healthcare, Infant Incubators, Mechanical Ventilators, Output Parameters, Safety, Standards, Testing

SOFTWARE SOLUTION FOR TRACKING INSPECTION PROCESSES OF MEDICAL DEVICES FROM LEGAL METROLOGY SYSTEM

Almir Badnjević

International Burch University
Bosnia and Herzegovina
almir.badnjevic@ibu.edu.ba

Lejla Gurbeta

International Burch University
Bosnia and Herzegovina
gurbeta.lejla@ibu.edu.ba

Dijana Sejdinović

International Burch University
Bosnia and Herzegovina

Berina Alić

International Burch University
Bosnia and Herzegovina

Layla Abdel-Ilah

International Burch University
Bosnia and Herzegovina

Emir Žunić

University of Sarajevo
Bosnia and Herzegovina

Abstract

This paper presents software solution, eVerlab, for tracking processes of inspection of Medical Devices that are introduced into Legal Metrology System in Bosnia and Herzegovina, and are used in public and private health care institutions.

The software is implemented in Oracle Application Development Framework Technology (ADF) and it is used to facilitate gathering of documents such as Inspection Certificates, Working Orders, Inspection Reports, Calculated Errors, and also to keep track of dates for next inspection. The software can be

accessed online via Inspection Laboratory (Verlab) website, and all clients, as well as employees can login using their own username and password which makes all inspection data confidential.

By Official Gazette of Bosnia and Herzegovina No. 75/14, inspection process of Medical Devices that are introduced into Legal Metrology System in Bosnia and Herzegovina is legal obligation. All inspection procedures and rules defined by National Metrology Institute (NMI) of Bosnia and Herzegovina (BH) are based on Standards and Directives IEC 60601, ISO 62353 and MDD 93/42.

Out of 331 health care institutions in BH 158 institutions were used for software validation more than 3000 inspection tests reports were imported in software.

Keywords: *Inspection, Medical devices, Metrology, Software*

DIAGNOSTIC OF ASTHMA USING FUZZY RULES IMPLEMENTED IN ACCORDANCE WITH INTERNATIONAL GUIDELINES AND PHYSICIANS EXPERIENCE

Almir Badnjević

International Burch University
Bosnia and Herzegovina
almir.badnjevic@ibu.edu.ba

Lejla Gurbeta

International Burch University
Bosnia and Herzegovina
gurbeta.lejla@ibu.edu.ba

Damir Marjanović

International Burch University
Bosnia and Herzegovina
damir.marjanovic@ibu.edu.ba

Mario Cifrek

University of Zagreb
Croatia

Abstract

This paper presents a system for classification of asthma based on fuzzy rules. Fuzzy rules are defined according to Global Initiative for Asthma (GINA) guidelines, as well as through consultations with long-term experience of pulmonologists. Our fuzzy system for classification of asthma is based on a combination of spirometry (SPIR) and Impulse Oscillometry System (IOS) test results, which are inputs to fuzzy system. Additionally, the use of bronchodilatation and bronhoprovocation enabled a complete patient's dynamic assessment rather than a simple static assessment. The system was retroactively tested with 1250 Medical Reports established by pulmonologists, out of which 728 were diagnosed with asthma and 522 were healthy subjects. Sensitivity and specificity were assessed, on this dataset, which were 91.89% and 95.01%, respectively.

Keywords: Diseases, Fuzzy logic, Lungs, Software, Guidelines, Expert Systems

CLASSIFICATION OF ASTHMA USING ARTIFICIAL NEURAL NETWORK

Almir Badnjević

International Burch University
Bosnia and Herzegovina
almir.badnjevic@ibu.edu.ba

Lejla Gurbeta

International Burch University
Bosnia and Herzegovina
gurbeta.lejla@ibu.edu.ba

Damir Marjanović

International Burch University
Bosnia and Herzegovina
damir.marjanovic@ibu.edu.ba

Mario Cifrek

University of Zagreb
Croatia

Abstract

This paper presents a system for classification of asthma based on artificial neural network. A total of 1800 Medical Reports were used for neural network training. The system was subsequently tested through the use of 1250 Medical Reports established by physicians from hospital Sarajevo. Out of the aforementioned Medical Reports, 728 were diagnoses of asthma, while 522 were healthy subjects. Out of the 728 asthmatics, 97.11% were correctly classified, and the healthy subjects were classified with an accuracy of 98.85%. Sensitivity and specificity were assessed, as well, which were 97.11% and 98.85%, respectively. Our system for classification of asthma is based on a combination of spirometry (SPIR) and Impulse Oscillometry System (IOS) test results, whose measurement results were inputs to artificial neural network. Artificial neural network is implemented to obtain both static and dynamic assessment of the patient's respiratory system.

Keywords: Artificial Neural Networks, Medical Diagnostic Imaging, Neurons, Diseases, Biological Neural Networks, Training, Estimation

DEVELOPMENT AND PERSPECTIVES OF BIOMEDICAL ENGINEERING IN SOUTH EAST EUROPEAN COUNTRIES

Almir Badnjević

International Burch University
Bosnia and Herzegovina
almir.badnjevic@ibu.edu.ba

Lejla Gurbeta

International Burch University
Bosnia and Herzegovina
gurbeta.lejla@ibu.edu.ba

Abstract

In respect with growing population, chronic disease management and aging population, the medicine and health care have drastically changed over the past decades. Engineering became more involved in medicine resulting in development of new discipline, Biomedical Engineering. As new engineering solution for problems in medicine regarding therapy, diagnosis and treatment have emerged, the need for new interdisciplinary educational curriculums evolved. Today, South East Countries are focused on developing new educational curriculums in Biomedical Engineering, following the models established in other European and United States Countries, and recognizing the new discipline - Biomedical Engineering as a professional discipline. International Federation for Medical and Biological Engineering, supported by United Nations (UN), gives support for national societies that are focused on Biomedical Engineering. In this article, overview of development and perspectives of Biomedical Engineering in South East European (SEE) countries is given, with focus on Bosnia and Herzegovina.

Keywords: *Biomedical engineering, Medical diagnostic imaging, Medical services, Europe, Biology, Industries, Electrical engineering*

ARTIFICIAL NEURAL NETWORKS IN THE DISCRIMINATION OF ALZHEIMER'S DISEASE USING BIOMARKERS DATA

Almir Badnjević

International Burch University
Bosnia and Herzegovina
almir.badnjevic@ibu.edu.ba

Lejla Gurbeta

International Burch University
Bosnia and Herzegovina
gurbeta.lejla@ibu.edu.ba

Almir Aljović

Abstract

This paper presents the results of a study developing artificial neural network system (ANN) for classification of Alzheimer's disease (AD) and healthy patients. The classification is done using biomarkers, from cerebrospinal fluid: albumin ratio (CSF/Serum and/or Plasma), Aβ40 (CSF), Aβ42 (CSF), tau-total (CSF) and tau-phospho (CSF). Neural network input parameters are datasets from Alzbiomarkers database. Independent t-test is used to calculate statistical difference between input parameters. Developed neural network was validated with 80 subjects from Alzbiomarkers database. Out of 45 AD subjects, 43 were correctly classified as AD patients, obtaining a sensitivity of 95.5%, and out of 35 healthy subjects 32 were correctly classified obtaining specificity of 91.43%.

Keywords: Artificial neural networks, Neurons, Alzheimer's disease, Biomarkers, Databases, Testing

CLASSIFICATION OF STRESS RECOGNITION USING ARTIFICIAL NEURAL NETWORK

Almir Badnjević

International Burch University
Bosnia and Herzegovina
almir.badnjevic@ibu.edu.ba

Lejla Gurbeta

International Burch University
Bosnia and Herzegovina
gurbeta.lejla@ibu.edu.ba

Dijana Sejdinović

International Burch University
Bosnia and Herzegovina

Berina Alić

International Burch University
Bosnia and Herzegovina

Abstract

This paper presents the results of a study developing expert system to support stress recognition based on Artificial Neural Network (ANN). Developed ANN is trained using data from Physionet database and collected data from other researchers. The implemented system for stress recognition uses drivers ECG signal, Galvanic Skin Response and Respiration Rate as parameters. Developed neural network was validated with 77 samples. Samples are obtained from subjects using Pasco sensors in 7D cinemas. Out of 77 samples, in 71% of subjects higher level of stress is recognized, while 29% of subjects are classified as subjects with normal vital functions. An accuracy of 99% and specificity of 98% is obtained.

Keywords: Stress, Artificial Neural Networks, Skin, Neurons, Heart rate, Automobiles

DYNAMICAL MODEL OF TUBERCULOSIS-MULTIPLE STRAIN PREDICTION BASED ON ARTIFICIAL NEURAL NETWORK

Almir Badnjević

International Burch University
Bosnia and Herzegovina
almir.badnjevic@ibu.edu.ba

Ahmed Osmanović

International Burch University
Bosnia and Herzegovina

Adnan Fojnica

International Burch University
Bosnia and Herzegovina

Abstract

This paper presents implemented artificial neural network (ANN) for diagnosing pulmonary tuberculosis progression and dynamics. Tuberculosis is an infectious disease caused in most cases by microorganism, called Mycobacterium tuberculosis. Tuberculosis is a huge problem in most low-income countries, and also in the Balkan region. The design of the artificial neural network is based on two strains of tuberculosis bacteria and multiple strains of tuberculosis. Training data sets contain 1000 reports for this artificial neural, 800 of them are used for estimation and 200 for validation. The ANN system is validated on 1400 patients from the Clinical Centre University of Sarajevo in the two years period. Out of 1315 patients, 99.24% are correctly classified as tuberculosis related patients. System was 100% successful on 85 patients were diagnosed with normal lung function. Sensitivity of 99.24% and specificity of 100% in tuberculosis classification are obtained. Our artificial neural network is a promising method for predicting diagnosis and possible treatment routine for tuberculosis disease.

Keywords: Artificial Neural Networks, Diseases, Drugs, Neurons, Sociology, Statistics, Estimation

PURIFICATION AND CHARACTERIZATION OF β -GLUCOSIDASE FROM BRASSICA OLERACEA

Larisa Bešić

International Burch University
Bosnia and Herzegovina
larisa.besic@ibu.edu.ba

Adna Ašić

International Burch University
Bosnia and Herzegovina
adna.asic@ibu.edu.ba

Serkan Doğan

International Burch University
Bosnia and Herzegovina
serkan.dogan@ibu.edu.ba

Yusuf Turan

International Burch University
Bosnia and Herzegovina
yusuf.turan@ibu.edu.ba

Imer Muhović

Abstract

b-Glucosidase was purified from Brassica oleracea by salting out with ammonium sulfate and hydrophobic interaction chromatography. Results demonstrated that the enzyme is a dimer (130 kD) made up of one major (80 kD) and one minor sub-unit (50 kD). The pH optimum is 6.0, with 50% of the enzyme's original activity remaining between pH 4.0 and pH 7.0. The temperature optimum is 35°C, and activity did not decrease after two hours of exposure to this temperature. The activity of the enzyme was investigated on four substrates, 4-Nitrophenyl β -D-glucopyranoside (p-NPG), ortho-Nitrophenyl- β -D-glucopyranoside (o-NPG), para-Nitrophenyl- β -D-galactoside (p-NPGal) and ortho-Nitrophenyl- β -D-galactoside (o-NPGal), and K_m values were shown to be 0.755 mM, 0.174 mM, 0.988 mM and 0.213 mM, while V_{max} values were 604 U/mg, 38 U/mg, 556 U/mg and 308 U/mg, respectively. The enzyme is completely inhibited by gluconolactone and glucose against p-NPG as substrate, with K_i values of 0.038

mM and 0.64 mM, respectively. To our knowledge, this is the first study demonstrating purification and character-ization of b-glucosidase from broccoli, thus providing a better understanding of its role in the plant, and establishing a basis for further research.

ORBITAL PSEUDOTUMOR WITH EXTRAORBITAL EXTENSION IN CHILDHOOD - A CASE REPORT AND REVIEW OF LITERATURE

Lejla Gurbeta

International Burch University
Bosnia and Herzegovina
gurbeta.lejla@ibu.edu.ba

Anes Mašović

Ibrahim Omerhodžić

Clinical Center University of Sarajevo
Bosnia and Herzegovina

Emina Hrvat

Edin Begić

Sarajevo School of Science and Technology
Bosnia and Herzegovina

Abstract

Orbital pseudotumor (OPT) also known as idiopathic orbital inflammatory syndrome, is a nonspecific, non-neoplastic inflammatory process of the orbit. The most common symptoms of OPT are: periorbital edema, erythema, proptosis, ptosis, diplopia and decreased ocular motility. Subtypes of OPT are: focal mass, dacryoadenitis, miositis, diffuse orbital inflammation, perineuritis, periscleritis, eyelid pseudotumor and intracranial extension of OPT. Orbital pseudotumor is rare in pediatric age group and may cause real diagnostic problem. Also, intracranial extension of OPT is rare. Extension commonly develops through the superior orbital fissure into the middle cranial fossa and the cavernous sinus. We report clinical, MRI and PH findings of the 11-years old girl with diplopia, periorbital edema and amblyopia, who was surgically treated on our Department. While the clinical condition of a patient was getting worse, none of diagnostic procedures helped us making a diagnose and surgery was undertaken. The tumor was removed by gross total resection (MRI confirmed). Three months after the surgery, neurological deficit of the patient was in a significant regression. A patohistological analyses are proving diagnosis of orbital pseudotumor.

Keywords: Pseudotumor, Orbita, Extraorbital Tumor Propagation

MICRO CELL CULTURE ANALOG APPARATUS (μ CCA) OUTPUT PREDICTION USING ARTIFICIAL NEURAL NETWORK

Lejla Gurbeta

International Burch University
Bosnia and Herzegovina
gurbeta.lejla@ibu.edu.ba

Halida Avdihodžić

Sabina Halilović

International Burch University
Bosnia and Herzegovina

Abstract

This paper presents a system for prediction of naphthalene concentration in the liver and lung compartments of a micro cell culture analog apparatus (μ CCA) based on the Artificial Neural Network (ANN). The implemented ANN can be used to simulate organ and circulatory system reactions in terms of residual naphthalene concentrations. For neural network training, 100 samples were used and additional 100 samples were used for subsequent validation. For the lung compartment, the accuracy of prediction of naphthalene concentration is 97% and the accuracy of concentration prediction in liver compartment is 95%. Implemented neural network for prediction of residual concentration of naphthalene in lung and liver compartments of a μ CCA uses the fraction of exiting stream that re-enters the microcircuit as input value. This system can be used for simulating the organ and circulatory system reactions before conducting experiments on micro cell culture analog apparatus.

Keywords: Artificial Neural Networks, Lungs, Liver, Training, Neurons, Chemicals

SENSOR FUSSION FOR SOLAR CAR ROUTE OPTIMIZATION

Mehrija Hasičić

International Burch University
Bosnia and Herzegovina
mehrija.hasicic@ibu.edu.ba

Haris Šiljak

International Burch University
Bosnia and Herzegovina
haris.siljak@ibu.edu.ba

Abstract

This paper focuses on sensor data management in the Solar Car Optimized Route Estimation (SCORE) system which is currently being developed. The data collection is split into two phases: the a priori phase related to the environment and the real time phase related to the solar vehicle. The hardware and software architecture for a priori phase is illustrated in detail, while the real time phase is discussed as a part of the embedded car computer. The full system description for SCORE is presented with guidelines for the future work and implementation of it.

Keywords: Automobiles, Computers, Optimization, Data collection, Mobile Communication, Servers

PRACTICAL IMPLEMENTATION OF SOLAR CAR OPTIMIZED ROUTE ESTIMATION

Mehrija Hasičić

International Burch University
Bosnia and Herzegovina
mehrija.hasicic@ibu.edu.ba

Haris Šiljak

International Burch University
Bosnia and Herzegovina
haris.siljak@ibu.edu.ba

Damir Bilić

International Burch University
Bosnia and Herzegovina
damir.bilic@ibu.edu.ba

Abstract

Solar Car Optimized Route Estimation (SCORE) has been proposed in an earlier publication as an alternative navigation principle for solar cars, conducting route optimization based on both distance and solar irradiance data. This paper gives details about the implementation and discusses results of SCORE's use, suggesting possible limitations and future research directions. The results show limited applicability of solar irradiance data for route optimization, but suggesting that parking place selection is an important aspect that needs to be taken care of. The implementation uses both a MATLAB testbed application and C/C++ code for TI's ARM Cortex-M4F based TM4C123G LaunchPad, and the final version of the SCORE client is placed in a custom built solar vehicle. Combined with the previously developed server for sensor data collection and data processing and sensor transmitter infrastructure for solar irradiation, the route optimization system is fully operational.

Keywords: Embedded Systems, Solar Vehicles, Routeoptimization, Navigation

COMPARISON OF MACHINE LEARNING TECHNIQUES IN PHISHING WEBSITE CLASSIFICATION

Adnan Hodžić

International Burch University
Bosnia and Herzegovina
adnan.hodzic@ibu.edu.ba

Jasmin Kevrić

International Burch University
Bosnia and Herzegovina
jasmin.kevric@ibu.edu.ba

Abstract

Phishing is one among the luring strategies utilized by phishing artist in the aim of abusing the personal details of unsuspected clients. Phishing website is a counterfeit website with similar appearance, but changed destination. The unsuspected client post their information thinking that these websites originate from trusted financial institutions. New antiphishing techniques rise continuously, yet phishers come with new strategy by breaking all the antiphishing mechanisms. Hence there is a need for productive mechanism for the prediction of phishing website. This paper described comparison in classification of phishing websites using different Machinelearning algorithms. Random Forest (RF), C4.5, REP Tree, Decision Stump, Hoeffding Tree, Rotation Forest and MLP were used to determine which method provides the best results in phishing websites classification. All instances are categorized as 1 for “Legitimate”, 0 for “Suspicious” and 1 for “Phishy”. Results show that RF with REP Tree show the best performance on this dataset for classification of phishing websites.

Keywords: Machine Learning, Phishing Websites

USING DATABASE AUDIT FOR ANALYZING SUSPICIOUS BEHAVIOR ON HISTORICAL DATA

Adnan Hodžić

International Burch University

Bosnia and Herzegovina

adnan.hodzic@ibu.edu.ba

Adem Karadag

Abstract

Database auditing is one of the biggest issues in data security. Absence of information auditing drives the business applications to the lost trail of business procedures. To cope with auditing and in order to track operations and the actors of those operations in time, we need historical data or temporary database. Legitimate and exchange times are two important time-stamps in temporary database. In this paper, we show the methods to handle database auditing in business exchange operations, accurate times, and performers of the operations. These strategies are separated in two sets; utilizing relational databases, and utilizing semi-structured information.

Keywords: Database Audit, Historical Data

AN EMPIRICAL INVESTIGATION OF THE RELATIONSHIP BETWEEN INTELLECTUAL CAPITAL AND PROJECT SUCCESS

Nermina Durmić

International Burch University

Bosnia and Herzegovina

nermina.durmic@ibu.edu.ba

Abstract

The purpose of this paper is to empirically investigate the relationship between project-specific intellectual capital (IC) and project success in the context of information technology (IT) projects. Design/methodology/approach – Using data collected from surveys of 603 IT professionals across a variety of projects, the authors constructed a structural (structural equation model) model in AMOS to examine the relationships between three dimensions of project-specific IC (project team, project customer and project process) and project success. Findings – The empirical results support the proposition that IC has a positive impact on project success, and thus may be a good indicator of future projects' performance. More importantly, the authors found out an important mediating role of a project's structural capital (process) in exploiting its human (team) and relational (customer) capital for realising project success. Research limitations/implications – Interpretation of current results should be considered in light of the following methodological limitations: convenient rather than systematic sampling, use of previously untested measures and prevailing European subjects. Practical implications – These results suggest that project-based organisations need to invest heavily in their project workforce talent and then translate it into superior project practices in order to produce successful IT projects. They also need to maintain close relationships with their project customers and involve them during the entire project process. Originality/value – The current empirical evidence extends the understanding of the role of IC in improving project success and thus helps project-based organisations create and maintain competitive advantage in emerging economies.

Keywords: Project management, Surveys, Knowledge management, Intellectual capital, Empirical study, Project success

COMPARISON OF ENSEMBLE CLASSIFICATION TECHNIQUES AND SINGLE CLASSIFIERS PERFORMANCE FOR CUSTOMER CREDIT ASSESSMENT

Adnan Dželihodžić

International Burch University
Bosnia and Herzegovina
adnan.dzelihodzic@ibu.edu.ba

Dženana Đonko

University of Sarajevo
Bosnia and Herzegovina

Abstract

Assuming that the credit is one of the most important banking products it follows that the quality assessment of customer creditworthiness is an essential factor for reducing the risk. With the intention to make a good assessment of creditworthiness many models and algorithms have been developed. Data mining algorithms for classification are very suitable for determining the validity of the application for credit. This paper presents an analysis of the effectiveness of the algorithms for classification of credit applications when they are used alone (as single classifier) as well as comparison with ensemble techniques usage. The techniques used as single classifiers are Neural Networks, Decision Trees and Support Vector Machines (SVM), and ensemble techniques AdaBoost and Bagging. K-fold cross-validation is used for model validation. Experiment is conducted in the Bosnian commercial bank dataset and results according to classification parameters such as accuracy and AUC are presented.

Keywords: Classification, Data Mining, Credit Assessment, Ensemble Techniques.

CLASSIFICATION OF ON-OFF STATES OF APPLIANCE CONSUMPTION SIGNATURES

Nejdet Dogru

International Burch University
Bosnia and Herzegovina
nejdet.dogru@ibu.edu.ba

Jasmin Kevrić

International Burch University
Bosnia and Herzegovina
jasmin.kevric@ibu.edu.ba

Emir Salihagić

Abstract

Nonintrusive load monitoring (NILM) is a procedure for the analysis of the changes in the power (current and voltage) that goes into households and classifying the appliances used in the house according to their individual energy consumption. Utility companies use smart electric meters accompanied with NILM to examine the particular uses of electric power in households. Focus of this paper is on the analysis of the “ACS-F2 Database of Appliance Consumption Signatures”. The challenge lies in predicting the states of the electrical devices based on the measuring data which had been previously stored. Machine learning techniques have demonstrated to be effective in classification and pattern recognition tasks. In this paper, different algorithms implemented in the WEKA software are going to be used for the classification.

Keywords: Home Appliances, Databases, Training, Classification algorithms, Monitoring, Vegetation, Algorithm design and Analysis

AN INNOVATIVE RFID-BASED SOLUTION TO SECURE PARKING SPOTS FOR PHYSICALLY CHALLENGWS

Nejdet Dogru

International Burch University
Bosnia and Herzegovina
nejdet.dogru@ibu.edu.ba

Enes Sukic

Sami Miniaoui

Abstract

Using RFID Technology is increasingly integrated in our daily life. We are presenting in this paper the secured parking spots for physically challenged “SPSPC” system implementing the RFID technology for managing parking slots of physically challenged. We demonstrated using scenarios (car with tag, car with expired date tag, car without tag) that the ‘SPSPC’ system is able to recognize not only cars equipped with tag -then send accordingly welcoming SMS -but also cars without tags by checking with a step tag fixed in the wall. Operational mode of the ‘SPSPC’ system is illustrated as well as main components, methods, snippets of code and interfaces are presented and commented. In addition, we demonstrated how the ‘SPSPC’ system is providing the tracking of people committing repetitively these violations -by reporting them to the authorities- and generating statistics on parking occupancy rates helping in providing sufficient slots.

Keywords: RFID Technology, Parking Management, System Design

III PART: Faculty of Education and Humanities

HOME RHAPSODIES: CARYL PHILLIPS AND CARTOGRAPHY OF TRANSGRESSIVITY

Ibrahim Murat Oner

International Burch University
Bosnia and Herzegovina
murat.oner@ibu.edu.ba

Mustafa Bal

International University of Sarajevo
Bosnia and Herzegovina

Abstract

*Transgressivity, in a broad sense, denotes a state of movement from one distinct position, mode, or territory to another, be it spatial, geographical, mental, spiritual, or even narrative. Transgression occurs when one crosses boundaries, in other words, limes of different entities. Geocritical transgressivity, which is a multifaceted concept, may lead to a variety of interpretations at many different strata. Transgressivity finds echoes in Caryl Phillips's narratives, at times in geographical forms, where a deterritorialized character crosses borders without ever gaining reterritorialization, at other times, in his fragmented narration where the reader stands at a threshold. Our paper uses Phillips's *A New World Order* (2001) in particular as a key text through this geocritical lens of transgressivity to see to what extent it functions as the author's map legend that presents a cartographic pattern of his writing in general. Our discussion also focuses on Phillips's distinct analyses in *A New World Order* to shed light on his other narratives in a geocritical context.*

Keywords: *Caryl Phillips, A New World Order, Transgressivity, Deterritorialization, Reterritorialization, Transcendental Homelessness, Rhapsody, Geocriticism*

COMPLEX PREDICATE CONSTRUCTIONS IN UZBEK LANGUAGE

Lola Turker

International Burch University
Bosnia and Herzegovina
lola.turker@ibu.edu.ba

Azamat Akbarov

International Burch University
Bosnia and Herzegovina
azamat.akbarov@ibu.edu.ba

Abstract

Complex predicates are defined as constructions consisting of preverb/converb/coverb + ‘light verb’ (Bower 2006). Each component of the complex construction contributes to the internal argument structure. The typology of complex predicates exhibits cross-linguistic similarities and differences. This study investigates the complex predicate constructions in Uzbek, which possesses a rich variety of light verb constructions. Novel data from Uzbek is provided, and it is analyzed on the basis of proposed criteria in the government and binding theory (GB) literature for complex predicates. The analysis reveals that these constructions express simultaneity, cause and effect, and consecutivity. Both verbs in complex constructions share the same subject, and they describe a single event. However, the object may or may not be shared by both verbs. What is significant about Uzbek light verbs is that they both host inflection, and contribute to the event structure. That is, tense and agreement markers, as well as aspectual markers are carried by the light verb. The constituency is strict in complex predicates, and there cannot be an intervention between the converb and the light verb by such elements as interrogatives, negation, or temporal adverbs.

Keywords: Complex Predicates, Light Verbs, Uzbek Language, Construction, Derivation

CULTURAL VARIATION IN PERCEPTION OF POLITENESS NORMS

Lola Turker

International Burch University
Bosnia and Herzegovina
lola.turker@ibu.edu.ba

Azamat Akbarov

International Burch University
Bosnia and Herzegovina
azamat.akbarov@ibu.edu.ba

Abstract

This study aims to discuss the speech acts of requesting and apologizing cross-culturally and cross-linguistically. At a more specific level, the study investigates the connection between politeness and indirectness. In the present study, multiple choice discourse completion tasks (MDCT) are used to collect data. MDCT is a method of data collection which provides fully comparable data in different languages, making it possible to draw conclusions about culture specific politeness norms. The data is based on requests elicited from Bosnian and Turkish university students. The study focuses on a qualitative analysis of data. However, a quantitative analysis is provided for cross-cultural comparison. The description of data analysis also contains gender variable, which is provided for further extension of research. The findings display that strategies elaborated for request and apology realizations vary across cultures and across gender.

Keywords: Politeness, Request, Apology, Cross-Cultural Pragmatics, Discourse Strategy

DEVELOPMENT OF INTERCULTURAL EDUCATION THROUGH ENGLISH LANGUAGE TEXTBOOKS USED IN ELEMENTARY SCHOOLS IN B&H

Bećirović Senad

International Burch University

Bosnia and Herzegovina

senad.becirovic@ibu.edu.ba

Abstract

In today's globalized world mono-cultural societies have been gradually disappearing. A trend towards the creation of multicultural societies began in 1960s. New multicultural societies were forced by the virtue of new conditions to engage themselves with others. The number of international institutions has adopted documents, which became the backbone of new education policy. Therefore, school systems worldwide began to work intensively on the promotion of intercultural values among young people. Intercultural education is most explicitly accomplished through textbook contents which encourage interaction, exchange, desegregation, interdependency and solidarity among people belonging to different cultural groups living in the same territory. Yet nowadays many multicultural nations encounter difficulties in holding together multicultural diversity and in establishing harmonious interpersonal relationships. This work deals with content analysis as one of the most frequently applied research methods in the field of education; and it is concerned with the analysis of the intercultural content in English language textbooks used in B&H in elementary schools. The main goal of this research is to determine the quantity and quality of content that point to intercultural education in the textbooks of English language used in elementary schools in the Bosnia and Herzegovina. The research involves both quantitative and qualitative analysis. We selected nine categories, important for intercultural education throughout English language textbooks: identity, cooperation and friendship, respect, tolerance, cultural relativism, stereotype, prejudice, oppression, and labeling. Results of textual analysis will offer scientific insight about the possible contributions of English language textbooks to intercultural education in B&H. This research for us is important because we believe that if multiculturalism is accepted as an asset not as a burden, with its proper utilization within the education system, multicultural nations would inevitably continue to benefit from their diversity.

IMPACT OF SOCIAL CHANGES ON TEACHER'S ROLE AND RESPONSIBILITIES IN THE EDUCATIONAL SYSTEM

Bećirović Senad

International Burch University
Bosnia and Herzegovina
senad.becirovic@ibu.edu.ba

Azamat Akbarov

International Burch University
Bosnia and Herzegovina
azamat.akbarov@ibu.edu.ba

Abstract

Social changes have an enormous impact on education systems. Changes in society and the rapid technological development in recent decades have necessitated the reform of educational system. The social role of teachers, as well as their responsibilities and obligations have significantly altered. The scope of work and responsibilities of teachers have become greater, but their status in society is much lower. Increasing responsibility and obligations cause frustration and stress for teachers. Their university education must be adapted to tailor to the new requirements and their obligations. Permanent education during their work must function as training, so that they can deal with the new duties and responsibilities that they face in modern times.

THE DETERMINANTS OF LIFELONG LEARNING

Bećirović Senad

International Burch University
Bosnia and Herzegovina
senad.becirovic@ibu.edu.ba

Jasmina Sinanović

International Burch University
Bosnia and Herzegovina
jasmina.sinanovic@ibu.edu.ba

Abstract

The aim of this paper is to introduce drivers of lifelong learning and to emphasize its importance in modern life. Developed economies throughout the world are driven more by knowledge and globalization than were economies of even the recent past. European economies of the 20th century were largely driven by manufacturing and the need to industrialize. Filling such economies with functional workers required education systems of similar design, that turned out masses of equally-educated workers in large batches. Increased automation, the widespread introduction of computer technologies and communications, and cheaper transportation have combined to encourage firms to be lean, international, and changing. Computer technologies encouraged sharing of documents, speeded workflow from design to production. Cheaper transportation allowed an increase in internationalization of workforces. These major shifts drove change from industrialized to knowledge-based economies. Paper discusses how two simple English words came together, stayed together, and grew into a powerful term driving new political initiatives, and continue to influence political, economic, social, and even cultural currents. Today's developed societies are rapidly aging, live longer and have fewer children. In order to continue to grow vibrant economies, and to fully enjoy the benefits of these vibrant economies, citizens need to continue to renew knowledge and skills during entire lifetime. As the major technological, economic, and social currents change, so must citizens adapt by never ceasing to learn throughout their lifetimes.

Keywords: Economics, Lifelong Learning, Lifelong Education, Knowledge Economy, Globalisation, Change.

LEARNING ENGLISH AND MEDIA LITERACY

Bećirović Senad

International Burch University
Bosnia and Herzegovina
senad.becirovic@ibu.edu.ba

Adnan Yaman

Abstract

Learning a second language has great benefits in the academia and the business world. Especially learning English is a crucial factor in upward mobility around the world. The media have become a major component in learning English. The media, with television, mobile phones, computers, and the internet can provide more exposure to English language and culture as well as providing more chances to interact and communicate with native speakers of English. The benefits of the media in language learning are undeniable. Yet stereotyping and misrepresentation prevalent in and sophisticated construction of media materials raise the arguable view that the media programs are promoting only certain lifestyle and culture. Do media programs harbor cultural alienation in children? Do media materials endorse obliteration of African, Asian, and Eastern European cultures? This paper examines the careful usage of the media in English learning from a cultural studies and critical pedagogy perspectives.

OBRAZOVANJE BOSNJAKINJE I NJENA DRUSTVENA ULOGA U VRIJEME OSMANSKEUPRAVE NA PROSTORU DANJASNJE BOSNE I HERCEGOVINE

Bećirović Senad

International Burch University

Bosnia and Herzegovina

senad.becirovic@ibu.edu.ba

Remzija Hurić-Bećirović

Abstract

Education is the most important social activity. Prosperous societies are constantly doing researches and analyses in order to improve their educational systems as a means of ensuring social, economic, and cultural development. This paper is focusing on educational system in the territory of Bosnia and Herzegovina during the Ottoman rule. Its purpose is to determine and interpret education of a Bosniak woman and her social role in that period. Analysis of the relevant texts proved that Bosniak women acquired knowledge in various institutions such as maktab, schools, tekke, etc., using Arabic lettering and Bosančica (Bosnian Cyrillic). They had a notable place in the society and were independent in management of their properties and even invested/founded their possessions in social institutions, especially those of educational character. They were involved in many social activities and were awarded titles like bula, hodža, vaiz, muallim, hafiz, hajji, founder, and even sheikh. Also, some of them were managers of various institutions, trying to give contribution to the wellbeing of the society, primarily through education and investments in educational institutions or in their maintenance.

THE RELATIONSHIP BETWEEN GENDER, MOTIVATION AND ACHIEVEMENT IN LEARNING ENGLISH AS A SECOND LANGUAGE

Bećirović Senad

International Burch University

Bosnia and Herzegovina

senad.becirovic@ibu.edu.ba

Abstract

This study deals with the research into the relationship between gender, motivation and achievement in learning English as a foreign language. A good command of English is of paramount importance for an individual to be successful in numerous aspects of life such as professional, personal and educational. The aim of this research was to determine how gender influences motivation and achievement in learning English as a foreign language. The research sample consists of 185 students aged ten (fifth grade), fourteen (ninth grade) and eighteen (twelfth grade). The results demonstrate a statistically significant relationship between gender and motivation. Ten-year-old students exhibit the highest motivation for learning English as a foreign language, while the eighteen-year-olds exhibit the lowest motivation. In addition, female students are more successful at learning English as a foreign language than male students at each group/grade level. Moreover, the findings also reveal statistically significant results in measuring the correlation between achievement and motivation and can be highly beneficial for teachers, parents and students in adopting the most effective approach to learning and teaching English as a foreign language.

Keywords: Motivation, Gender, Foreign Language, Grade Level, Achievement, Correlation

ENGLISH AS A WINDOW INTO UNDERSTANDING BRAIN

Ana Tankosić

International Burch University
Bosnia and Herzegovina
ana.tankosic@ibu.edu.ba

Azamat Akbarov

International Burch University
Bosnia and Herzegovina
azamat.akbarov@ibu.edu.ba

Abstract

The purpose of our study is to closely examine the effect of human cognitive and social levels on lexis perception. This relationship is a concern of cognitive linguistics, which concentrates on cognitive and cultural resources in use when the connection between words in the human brain and their usage is made. In the same way, the schema that helps in the organization of already acquired lexis and which simultaneously assists in the acquisition of new lexis is constructed. The field of cognitive linguistics also encompasses a grammatical approach called cognitive grammar. This approach to language is based on our experience of the world and the ways we perceive and conceptualise it. Exposure to language is mandatory to initiate the acquisition process, which is computed by the brain in various ways. Although cognitive factors have a great impact on meaning perception, social factors cannot be overseen. Language is not only used to express thoughts and interpret meaning, but also to construct meaning from various contexts and discourses. During our study, we conducted an experiment followed by interviews of participants in order to get insights into the human perception of lexis in descriptive texts, and the process of combining these lexical items and how they form grammatical constructions.

Keywords: Cognitive Linguistics, Lexis, Perception, Social Linguistics

SEVİNÇ ÇOKUM'UN HİKAYELERİ'NDE YALNIZLIK

Ayşe Dinç

International Burch University
Bosnia and Herzegovina
ayse.dinc@ibu.edu.ba

Sezai Coşkun

Abstract

Sevinç Çokum, hikâyelerini Türk Edebiyatında modern hayatın meselelerinin yoğun bir şekilde işlendiği dönemde kaleme almaya başlamıştır. Çokum, hikâyelerinde pek çok insanî meseleyi duyarlılıkla işlemiştir. İnsanlığın başlangıcından itibaren var olan yalnızlık ise, geçmiş dönemlerde edebiyatın bir meselesi olarak yer alsa da modern dönemde insan hayatının merkezine yerleşmesinden dolayı öne çıkan temel birkaç meseleden biri olmuştur. Bu bağlamda ele aldığımız yalnızlık, Çokum'un hikâyelerine üç temel noktada yansımıştır. Modern hayatın getirdiği kentleşme, bireyselleşme, göç gibi çeşitli olguların insan hayatını etkilemesi ve bireyi yalnızlaştırması onun hikâyelerinde vurguladığı noktalardan biridir. Yalnızlık, bu hikâyelerde modern hayat neticesinde ortaya çıkan olgular nedeniyle mekân değiştiren, varoluşsal sorulara cevap veremeyen veya yeni durumuna uyumsağlayamayan bireylerin yaşadıkları bir hal olarak ortaya konulur. Sevinç Çokum, metafizik bir yaklaşımla ele aldığı hikâyelerinde ise yalnızlığı bireyi olgunlaştıran ve onu içsel anlamda zenginleştiren iyi bir hal olarak ele alır. Bu tür hikâyelerde kimizaman bireysel gelişimi tamamlayan bir olgu olarak yer alırken bazı durumlarda ise kişiyi ermişlik mertebesine çıkaran bir hal olarak kurgulanır. Çokum'un hikâyelerinde üçüncü hal olarak ise eşya ve yalnızlık ilişkisi işlenir. Eşyanın ancak insanla birlikte değer kazanmasına vurgu yapılan bu hikâyelerde varlığa metafizik bir boyutta bakış söz konusudur. Çokum, hayatı, değişimi, bireyin iç dünyasına yansıyanları eşyanın yalnız hali üzerinden kurgular. Çokum'un hikâyelerinde temel meselelerden biri olarak karşımıza çıkan yalnızlık, çok yönlü olarak kurgulanmakta ve yazarın edebî şahsiyetinin temel özelliklerinden biri olarak öne çıkmaktadır. Çalışmada Çokum'un metinleri söz konusu çerçevede incelenecektir.

Keywords: Türk Hikâyesi, Yalnızlık, Modernite, Gelenek, Sevinç Çokum

MUŠKO-ŽENSKI ODNOSI KROZ POSLOVICE U B/H/S I ENGLESKOM JEZIKU

Vildana Dubravac

International Burch University
Bosnia and Herzegovina
vildana.dubravac@ibu.edu.ba

Abstract

The male-female relationship constitutes an eternal enigma analysed in different ways throughout the history. The status of women through the ages has been significantly different from the status of men; the domestic domain of their home has been regarded as a female space, while the public life has been reserved for males. Women have been invisible in many aspects of life; the procreation has been viewed as their most important function, while not protesting and accepting the fate in silence have been considered their highest virtues. The present paper illustrates how this topic is described in proverbs, and the contrastive analysis sheds light on the similarities/differences between the conception of women, men and the relationship between them in two languages: B/C/S and English. Although the results indicate that in both languages the dichotomy male-female does not divide the world into two symmetrical parts with regard to the power, freedom and rights being marked by the male dominance, the inequality is more visible in B/C/S.

Keywords: Proverb, Contrastive Analysis, Male-Female Relationship

ENGLISH IN BOSNIAN ADVERTISING DISCOURSE

Vildana Dubravac

International Burch University
Bosnia and Herzegovina
vildana.dubravac@ibu.edu.ba

Eldin Milak

International Burch University
Bosnia and Herzegovina
eldin.milak@ibu.edu.ba

Abstract

English, as today's lingua franca is not only spoken by an unprecedented number of people but it also exerts a great influence over other languages serving as a fertile field for lexical borrowing. The present paper aims to illustrate the impact of English on the standard Bosnian language as evidenced in the language use in advertising. It is expected the the influence of the current global language is especially present in this domain, since it uses different resources including language to attract the attention of the audience and to transmit the idea od modern lifestyle.

The paper investigates language use, the use of English expressions in Bosnian, the level to which they have been adapted, assimilated and integrated into the system of the Bosnian language, in different advertisements people are exposed to on televisions, in print media, billboards or product packaging. Both local and foreign-sourced advertisements are taken into consideration to see whether thay follow the same trends.

Keywords: *Language Borrowing, Language Change, Global Language.*

TEST-TAKING STRATEGIES: THE CASE OF TOEFL READING

Ceylani Akay

International Burch University
Bosnia and Herzegovina
ceylani.akay@ibu.edu.ba

Salih Cingilloğlu

International Burch University
Bosnia and Herzegovina

Abstract

This study aims to contribute to the exploration of test-taking strategies readers use in the reading component of the TOEFL. By means of verbal reports and observation, this study explores how the two types of readers respond to multiple choice tests and use test taking strategies. The results yielded that average readers used significantly fewer strategies than did good readers, which contradicts the 1991 study by Anderson that found both types of readers use the same number of strategies. However, the results support Anderson's claim that good readers can manage their strategies better than average readers.

Keywords: Reading proficiency, Test strategies, TOEFL.

AN INVESTIGATION OF LANGUAGE LEARNING STRATEGIES USED BY UNIVERSITY ENGLISH LANGUAGE TEACHING STUDENTS IN BOSNIA AND HERZEGOVINA: CONSIDERING THE GENDER VARIABLE

Ceylani Akay

International Burch University
Bosnia and Herzegovina
ceylani.akay@ibu.edu.ba

Salih Cingilloğlu

International Burch University
Bosnia and Herzegovina

Abstract

The purpose of this study is to assess the language learning strategies used by English Language Teaching students in Bosnia and Herzegovina (BiH). Oxford's Strategy Inventory Language Learning (SILL) was conducted to investigate the differences between male and female university students in BiH. The study also explores the effect of gender on strategy choice of university students in BiH in the ELT departments. The more we discover about the language learning strategies, the more we influence the performance of language learners. This study contributes to further implications for research on language learning strategies, material design and teacher education.

Keywords: Language Learning, Teaching, Metacognitive, Bosnia and Herzegovina.

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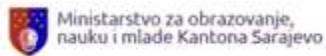
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ACCREDITED BY



LICENSED BY



MEMBER OF



PARTICIPANT OF



International Burch University

Francuske revolucije bb 71 210 Ilidža,
Sarajevo Bosnia and Herzegovina
Tel. +387 33 944 400 Fax +387 33 944 500
Email: info@ibu.edu.ba Web: www.ibu.edu.ba

